rafiki
PROTECTION

Twinflex - V3

Fire Detection & Alarm System

Installation & Operating Instructions

(TO BE RETAINED BY THE COMMISSIONING ENGINEER)

26-0338 Issue 7

Rafiki Protection Limited

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Due to the complexity and inherent importance of a life risk type system then training on this equipment is essential, and commissioning should only be carried out by competent persons.

Rafiki cannot guarantee the operation of any equipment unless all documented instructions are complied with, without variation.

E&OE.

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Contents

Introduction 6
System design 6
Equipment guarantee 6
Anti static handling guidelines 6
Warning 6
The Twinflex System 7

Control Panel 8
Mounting the control panel 8
Physical dimensions 8
Power Supply Unit. 9
General assembly 10
Topology and cabling 10
System Wiring Schematic 11
Control Panel Connections 12

Twinflex Multipoint Detector 18
Installation 1st stage 18
Installation 2nd stage 18
Connections 18
Power-up 19
DIL switch settings 19
Fire detection modes 20
LED indication 20
Sound output levels 20
Remote Indication LEDs 20
Head contamination warnings 20
Replacing contaminated optical chambers 21
Testing 21

Twinflex Manual Call Point. 22
Installation 1st stage 22
Installation 2nd stage 22
Power-up 22
Connections 23
DIL switch settings 23
LED indication 24
Reset and test 24
Sound output levels 24
Weatherproof Manual Call Point 24

Twinflex Hatari Sounder. 25
Installation 1st stage 25
Installation 2nd stage 25
Power-up 25
Connections 26
DIL switch settings. 26
Sound output levels 26

Twinflex Flashpoint 27
Installation 1st stage 27
Installation 2nd stage 27
Connections 27
Power-up 27
DIL switch settings 28
Sound output levels 28
Weatherproof Flashpoint 28

Twinflex Soundpoint 29
Installation 1st stage 29
Installation 2nd stage 29
Connections 29
Power-up 30
DIL switch settings 30
Sound output levels 30
Weatherproof Flashpoint 30

Twinflex Hipoint 31
Installation 1st stage 31
Installation 2nd stage 31
Connections 31
Power-up 31
DIL switch settings 32
Sound output levels 32
Twinflex Output Module 33
Installation 1st stage 33
Installation 2nd stage 33
Connections 33
Power-up. 34
DIL switch setting 34
LED indication 34
Testing 34

Twinflex Repeater Panel 35
Installation 1st stage 35
Installation 2nd stage 35
Connections 35
Operation 36
Testing 36

General Operation 37
Introduction 37
Access Levels 37
Access Level 2 (User) operating diagram: 2&4 zone panels . . 38
Access Level 2 (User) operating diagram: 8 zone panels . . . 39
LED indication 40
Access Level 1 (Normal) 42
Access Level 2 (User) 42
Access Level 3 (Engineer) 45
Programming summary 48

Check Point Plus 49
Introduction 49
Zone modes 49
Instant zones: normal operation in communal areas . . . 49
Delayed zones: confirmation delay in dwelling areas . . . 50
Delayed zones: local or zonal confirmation? . . . 50
Confirmation delay time 51
Check point plus setup at access level 3 (Engineer) . . . 51

Installation and Commissioning 53
Installation 1st stage 53
Installation 2nd stage 53
Commissioning 53
End user training 54

Fault Finding 55

Summary of faults 55
Finding zone faults. 56

Advanced Connections 58
Monitored relays on the 'Remote Fire Output' 58
Remote indication LEDs. 58
Connecting two panels together 59
Connecting more than two Twinflex panels together. 60
Magnetic door hold units 61

Technical Data. 62
Control Panel specification 62
Twinflex Multipoint detector 63
Twinflex manual call point 63
Twinflex Hatari 63
Twinflex Flashpoint 64
Twinflex Soundpoint 64
Twinflex Hipoint. 64
Twinflex output module 65
Twinflex repeater panel 65
Resistor colour codes 65
Battery calculations 66
Installation checklist 67
Commissioning checklist 68
Cable continuity and insulation test results 69
Control panel instruction notice 70
Apartment notice for checkpoint plus systems. 71

Important Points . . . . . 72 – BACK PAGE

Introduction

This Manual is intended as a guide to the engineering and commissioning principles of the Twinflex 2-wire Fire Detection and Alarm system, and covers the system hardware information only.

Due to the complexity and inherent importance of a system covering a 'Life Protection Risk', training on this equipment is essential, and commissioning should only be carried out by competent and approved persons. For further details of the availability of commissioning services contact your supplier.

System Design

This document does not cover Fire Alarm system design, and a basic understanding is assumed.

A knowledge of BS5839: Pt 1: 2002: Fire Detection and Alarm Systems for Buildings is essential.

It is strongly recommended that a suitably qualified and competent person is consulted in connection with the Fire Alarm System design and that the entire system is commissioned in accordance with the current national standards and specifications.

Equipment Guarantee

The equipment carries no warranty unless the system is installed, commissioned and serviced in accordance with this manual and the relevant standards by a suitably qualified and competent person or organisation

Anti Static Handling Guidelines

Immediately prior to handling any PCBs or other static sensitive devices, it is essential to ensure that a personal **connection to earth is made with an anti-static wrist-strap** or similar apparatus.

Always handle PCBs by their sides and avoid touching any components. PCBs should also be stored in a clean dry place, which is free from vibration, dust and excessive heat, and protected from mechanical damage.

Warning

Do not attempt to install this equipment until you have fully read and understood this manual.

Failure to do so may result in damage to the equipment and could invalidate the warranty.

Technical support will not be available if the instruction manual has not been read and understood. Please have this instruction manual available whenever you call for technical support.

For further technical support please contact your **distributor.** Do not call the Rafiki Protection technical support department unless your distributor has first given their advice and attempted to rectify the issue.

The Twinflex System

This system is an intelligent '2-wire' system with conventional type cabling format, and is classed as an 'Analogue non-addressable' system due to the architecture used within the system design. All field devices including sounders on a zone are connected via a common 2-core and earth/screen cable, and communicate with the control panel using the 'Twinflex' data protocol.

The Twinflex panel is able to recognise and separately indicate a detector alarm and a manual call point alarm. The panel also monitors each zone for detector head removal, device fault, 'End of line' fault and open or short circuit fault.

Every device has an inbuilt 'End of line' signal, which may be activated as required.

Do not use a resistor for 'End of line' or any other 3rd party 'End of line' module.

The Twinflex control panel also provides a single conventional 24v sounder circuit, a monitored conventional 24v relay circuit, a volt free common fire relay and a volt free common fault relay. There is also a multifunction non-latching input, programmable with options such as 'Class-Change' and 'Remote fire input'.

The Twinflex control panel also incorporates an integral power supply unit and requires the following standby batteries to provide up to 72 hour standby times (refer to Technical Data for further information).

2 or 4 zone panel	2 x 12v 2.1 Ah batteries
8 zone panel	2 x 12v 3.3 Ah or 7.2 Ah batteries

Please note that earlier versions (V1 & V2) of the control panel require only one battery, so check the battery labels in the control panel for clarification, as all the current version 3 control panels are labelled clearly with 'Battery 1' and 'Battery 2'.

Unlike most conventional fire alarm systems, which require separate pairs of cables for detector zones and sounder circuits, the Twinflex system requires one 2-core and earth/screen cable for each zone to accommodate both detection devices and sounders. Furthermore sounders are incorporated within the detector to reduce system components and simplify installation.

Control Panel

Mounting the Control Panel

Firstly identify the proposed location for the control panel. Ensure that the control panel will be easily accessible, and that account is taken of any subsequent work that may affect access. It should be located at the most likely point of access for the fire services.

The control panel should be mounted on a flat, vertical wall at a height where the indicators may be seen without difficulty.

Do not locate the control panel at high level where stepladders or other access equipment may be required, in spaces with restricted access, or in a position that may require access panels to be removed.

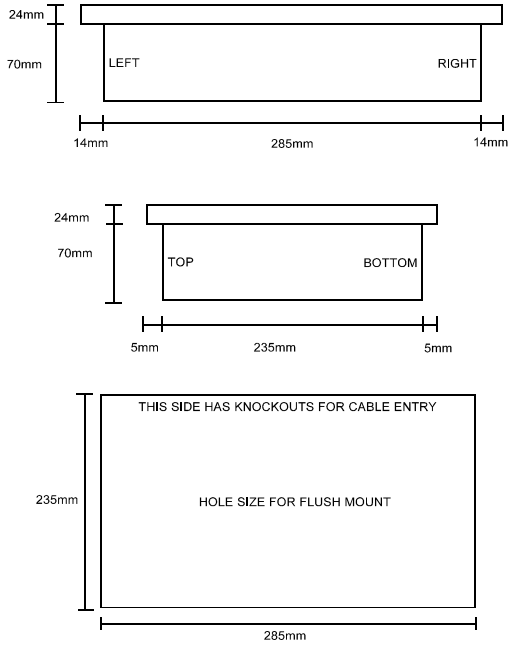
Do not locate the control panel where extremes of temperature or humidity may occur, or where there is any possibility of condensation or water ingress.

Like all electronic equipment, the control panel may be affected by extreme environmental conditions. The position selected for its installation should therefore be clean and dry, not subjected to high levels of vibration or shock and at least 2 meters away from any pager or radio transmitting equipment. Ambient temperatures should be within the range given within the Technical Data section, i.e., not directly over a radiator or heater.

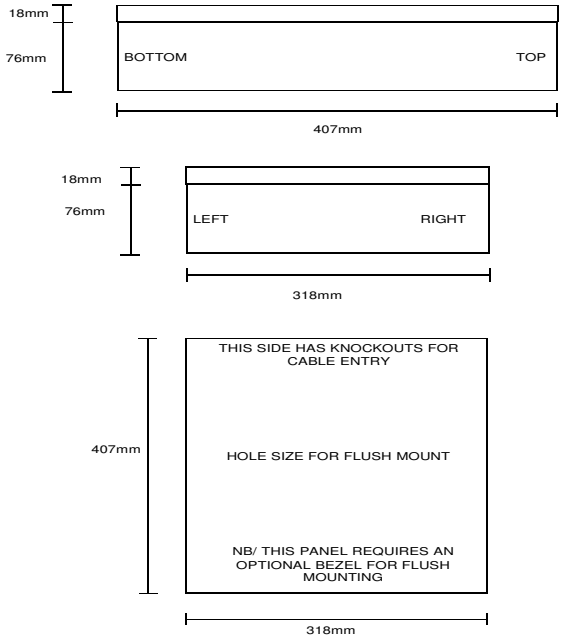
In common with all microprocessor-controlled panels, the control panel may operate erratically or may be damaged if subjected to lightening induced transients. Proper earth/ground connections will greatly reduce susceptibility to this problem.

Physical Dimensions

2 & 4 Zone Panels



8 Zone Panels



The 2 & 4 zone control panel back box is designed as a dual-purpose surface or flush unit. The 14mm flange facilitates flush mounting. To allow installation of the main front moulding, this flange must be flush with the mounting surface and not recessed into it.

The 8 zone panel is designed for surface mounting only and will require the use of the optional flush mount bezel if the control panel needs to be flush mounted.

Power Supply Unit

The Fire Alarm Panel 230v ac supply requires fixed wiring between 0.75 mm^2 and 2.5 mm^2, a 3 amp fused un-switched spur with local isolation, to be terminated into the fused terminals provided in the back box. On the 8 zone panel a metal cover, held in place with a locking nut, protects these terminals. The mains supply should be dedicated to the Fire Alarm Panel and should be clearly labelled 'FIRE ALARM: DO NOT SWITCH OFF' at all isolation points.

The control panel requires standby sealed lead acid batteries to be installed according to the following table. These are to be sited in the control panel back box in the provided enclosure. The batteries should be connected in series using the connection leads supplied. See the section entitled *Control Panel Connections* for panel connections.

Control Panel	Standby Requirements	Batteries required
All 2 or 4 zone panels	24 hours & 30 minutes in alarm	2 x 12v 2.1 Ah
All 2 or 4 zone panels	72 hours & 30 minutes in alarm	2 x 12v 2.1 Ah
All 8 zone panels	24 hours & 30 minutes in alarm	2 x 12v 3.3 Ah
All 8 zone panels	72 hours & 30 minutes in alarm	2 x 12v 7.2 Ah

Note that the charging circuit will be in its high impedance state (approximately 3V DC) if no batteries, faulty batteries or only one battery is connected. The full 27V DC charging voltage should be present if the correct batteries are connected.

If the system shows a charger or battery fault on first power up, leave the system to charge it batteries for 5-6 hours.

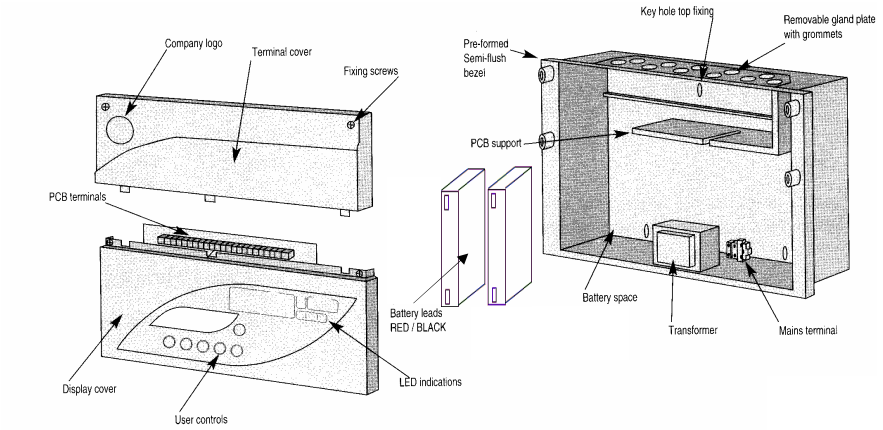
In order to test for correct operation of the batteries, remove the mains 230V AC fuse and allow the batteries to settle from their charging voltage for approximately 5 minutes. The battery voltage should then be measured using an electronic test meter and a voltage greater than 24V DC should be seen.

Note that batteries are electrically live at all times and great care should be taken to ensure that the terminals are never presented with a short circuit. Care should be taken at all times, especially during transit, installation and normal use.

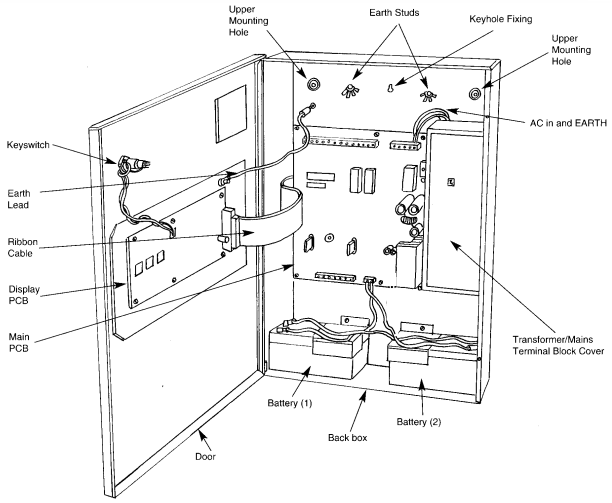
Batteries no longer required should be disposed of in a safe and environmentally friendly manner by the manufacturer or a suitable recycling service. They should never be incinerated or placed in normal rubbish collection facilities.

General Assembly

2 & 4 Zone Panels



8 Zone Panels



Topology & Cabling

All system wiring should be installed to comply with BS 5839 : Pt 1 : 2002 and BS 7671 (wiring regulations) and any other standards relevant to the area or type of installation. A cable complying with the BS 5839 : Pt 1 : 2002 Category 1 (cables required to operate for prolonged periods during fire conditions) is required. This must be a 2-core 1.5mm^2 screened fire resistant cable (ie. MICC, FP200, Firetuff, Firecell, Lifeline or equivalent).

Each zone requires a separate 2-core radial circuit from the control panel to the furthest point of the zone, to a maximum of 500 meters.

In order to protect against possible data corruption it is important ensure the following points are adhered to:

1. The cable **screen must be connected to earth/ground at the control panel** only.

2. The cable screen must not be connected to earth/ground at any point other than the control panel, ie, **do not connect the screen to a device back box**.

3. The cable **screen continuity must be maintained** at every point of the circuit, using the terminals provided or a suitable connection block.

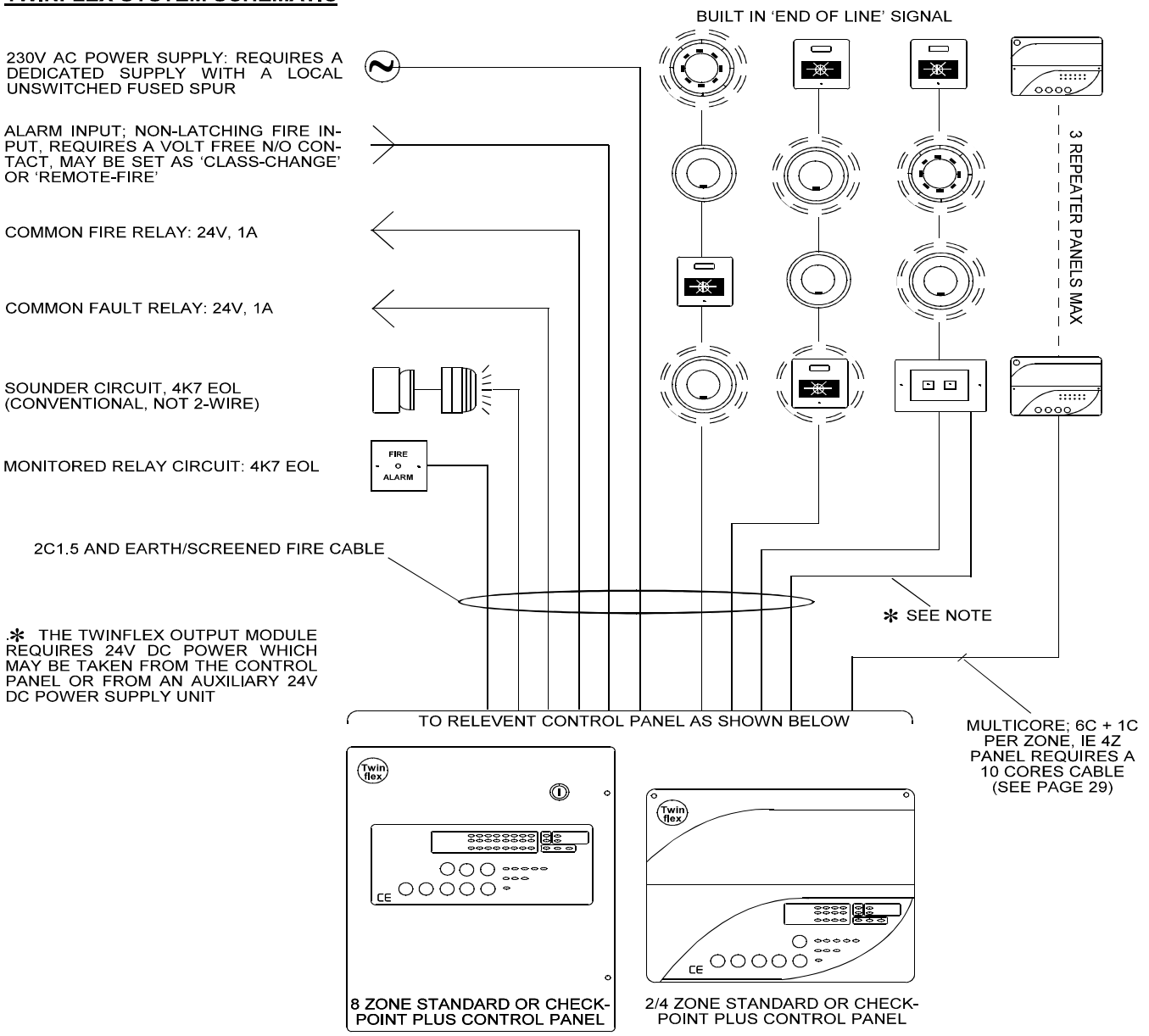
4. Do not use a 4-core cable as a circuit **feed & return** due to the possibility of data corruption. It is essential that two 2-core cables are used if this is required.

Refer to the following System Wiring Schematic for further details.

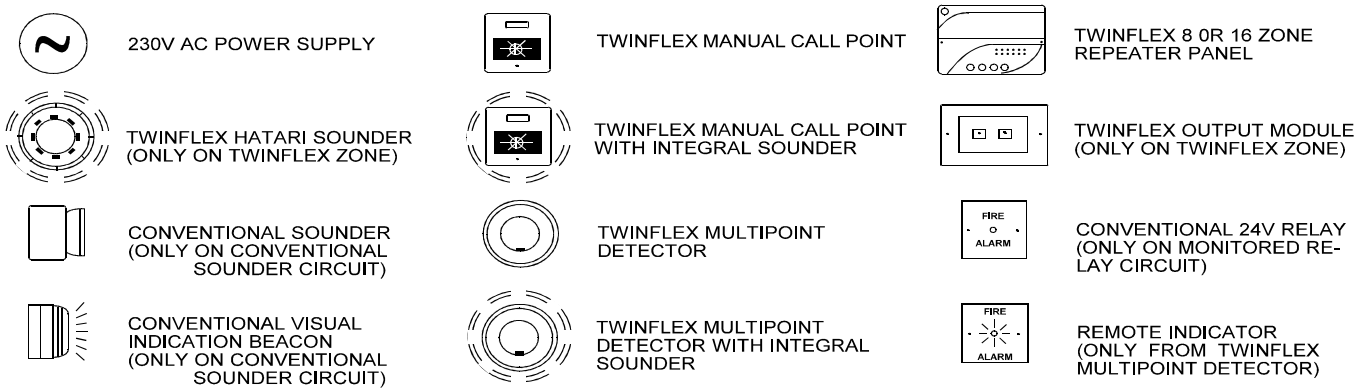
System Wiring Schematic

The following schematic may prove useful as an aid to understanding the cable requirements for the system;

TWINFLEX SYSTEM SCHEMATIC

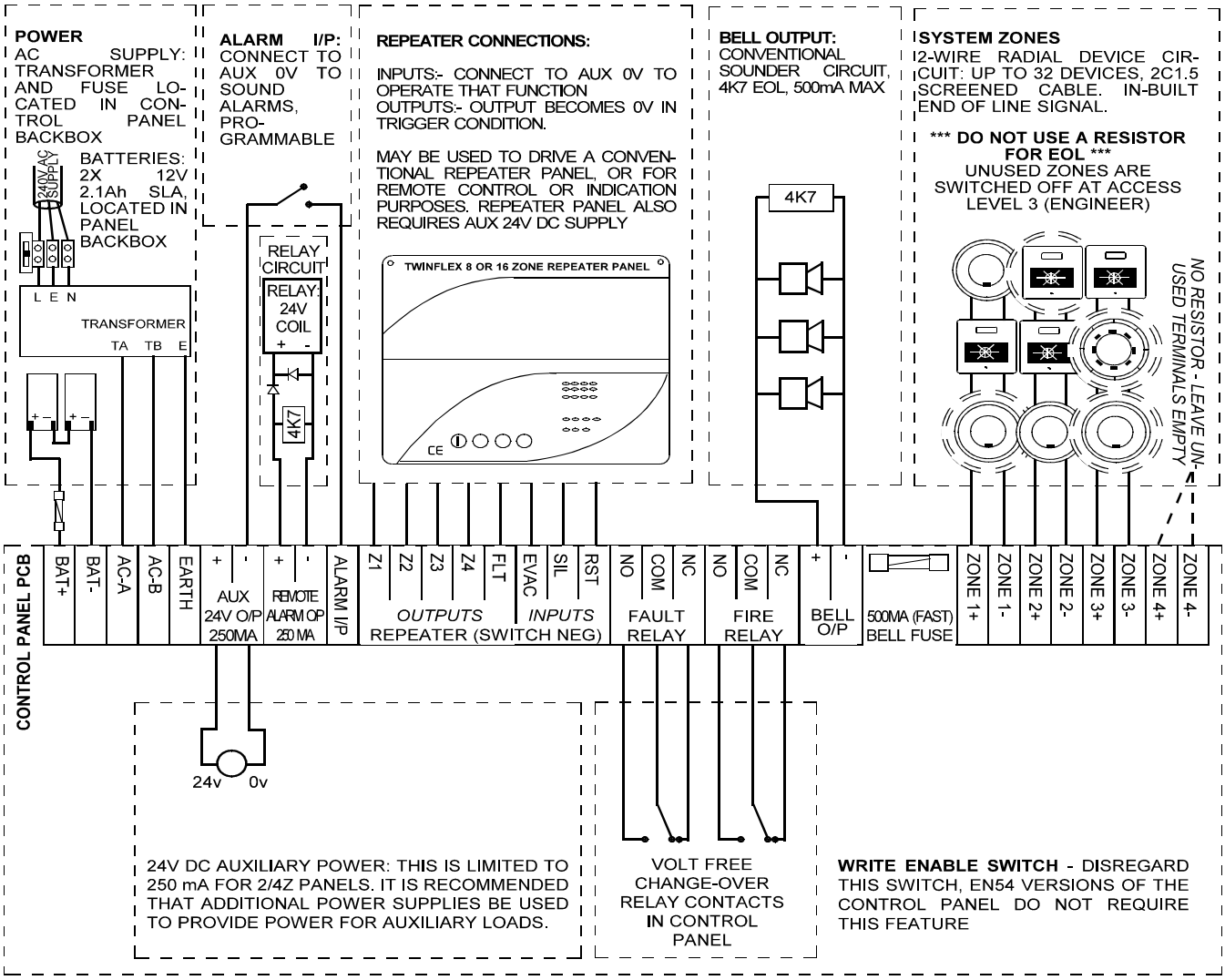

BUILT IN 'END OF LINE' SIGNAL
230V AC POWER SUPPLY: REQUIRES A DEDICATED SUPPLY WITH A LOCAL UNSWITCHED FUSED SPUR
ALARM INPUT; NON-LATCHING FIRE INPUT, REQUIRES A VOLT FREE N/O CONTACT, MAY BE SET AS 'CLASS-CHANGE' OR 'REMOTE-FIRE'
COMMON FIRE RELAY: 24V, 1A
COMMON FAULT RELAY: 24V, 1A
SOUNDER CIRCUIT, 4K7 EOL (CONVENTIONAL, NOT 2-WIRE)
MONITORED RELAY CIRCUIT: 4K7 EOL
FIRE
ALARM
2C1.5 AND EARTH/SCREENED FIRE CABLE
✻ THE TWINFLEX OUTPUT MODULE REQUIRES 24V DC POWER WHICH MAY BE TAKEN FROM THE CONTROL PANEL OR FROM AN AUXILIARY 24V DC POWER SUPPLY UNIT
3 REPEATER PANELS MAX
✻ SEE NOTE
TO RELEVENT CONTROL PANEL AS SHOWN BELOW
MULTICORE; 6C + 1C PER ZONE, IE 4Z PANEL REQUIRES A 10 CORES CABLE (SEE PAGE 29)
Twin flex
CE
8 ZONE STANDARD OR CHECK-POINT PLUS CONTROL PANEL
2/4 ZONE STANDARD OR CHECK-POINT PLUS CONTROL PANEL

KEY TO SYMBOLS


230V AC POWER SUPPLY
TWINFLEX MANUAL CALL POINT
TWINFLEX 8 0R 16 ZONE REPEATER PANEL
TWINFLEX HATARI SOUNDER (ONLY ON TWINFLEX ZONE)
TWINFLEX MANUAL CALL POINT WITH INTEGRAL SOUNDER
TWINFLEX OUTPUT MODULE (ONLY ON TWINFLEX ZONE)
CONVENTIONAL SOUNDER (ONLY ON CONVENTIONAL SOUNDER CIRCUIT)
TWINFLEX MULTIPOINT DETECTOR
FIRE
ALARM
CONVENTIONAL 24V RELAY (ONLY ON MONITORED RELAY CIRCUIT)
CONVENTIONAL VISUAL INDICATION BEACON (ONLY ON CONVENTIONAL SOUNDER CIRCUIT)
TWINFLEX MULTIPOINT DETECTOR WITH INTEGRAL SOUNDER
FIRE
ALARM
REMOTE INDICATOR (ONLY FROM TWINFLEX MULTIPOINT DETECTOR)

Control Panel Connections

2 & 4 Zone Panels


POWER
AC SUPPLY: TRANSFORMER AND FUSE LOCATED IN CONTROL PANEL BACKBOX
BATTERIES: 2X 12V 2.1Ah SLA, LOCATED IN PANEL BACKBOX
240V AC SUPPLY
L E N
TRANSFORMER
TA TB E
ALARM I/P: CONNECT TO AUX 0V TO SOUND ALARMS, PROGRAMMABLE
RELAY CIRCUIT
RELAY: 24V COIL
4K7
REPEATER CONNECTIONS:
INPUTS:- CONNECT TO AUX 0V TO OPERATE THAT FUNCTION
OUTPUTS:- OUTPUT BECOMES 0V IN TRIGGER CONDITION.
MAY BE USED TO DRIVE A CONVENTIONAL REPEATER PANEL, OR FOR REMOTE CONTROL OR INDICATION PURPOSES. REPEATER PANEL ALSO REQUIRES AUX 24V DC SUPPLY
TWINFLEX 8 OR 16 ZONE REPEATER PANEL
BELL OUTPUT: CONVENTIONAL SOUNDER CIRCUIT, 4K7 EOL, 500mA MAX
4K7
SYSTEM ZONES
2-WIRE RADIAL DEVICE CIRCUIT: UP TO 32 DEVICES, 2C1.5 SCREENED CABLE. IN-BUILT END OF LINE SIGNAL.
*** DO NOT USE A RESISTOR FOR EOL ***
UNUSED ZONES ARE SWITCHED OFF AT ACCESS LEVEL 3 (ENGINEER)
NO RESISTOR - LEAVE UNUSED TERMINALS EMPTY
CONTROL PANEL PCB
BAT+
BAT-
AC-A
AC-B
EARTH
AUX 24V O/P 250MA
REMOTE ALARM OP 250 MA
ALARM I/P
Z1
Z2
Z3
Z4
FLT
EVAC
SIL
RST
OUTPUTS
INPUTS
REPEATER (SWITCH NEG)
NO
COM
NC
FAULT RELAY
FIRE RELAY
BELL O/P
500MA (FAST) BELL FUSE
ZONE 1+
ZONE 1-
ZONE 2+
ZONE 2-
ZONE 3+
ZONE 3-
ZONE 4+
ZONE 4-
24v 0v
24V DC AUXILIARY POWER: THIS IS LIMITED TO 250 mA FOR 2/4Z PANELS. IT IS RECOMMENDED THAT ADDITIONAL POWER SUPPLIES BE USED TO PROVIDE POWER FOR AUXILIARY LOADS.
VOLT FREE CHANGE-OVER RELAY CONTACTS IN CONTROL PANEL
WRITE ENABLE SWITCH - DISREGARD THIS SWITCH, EN54 VERSIONS OF THE CONTROL PANEL DO NOT REQUIRE THIS FEATURE

Battery Connections: BAT+, BAT-

The battery terminals require 24v from 2 x 2.1Ah sealed lead acid batteries, connected in series, in order to provide secondary backup power when the primary power fails. This input is protected by the 3A fuse connected inline with the positive battery lead.

AC Input: AC – A, AC – B, EARTH

The AC input is connected to the yellow leads coming from the transformer mounted within the back box, and is the primary power supply for the system.

Auxiliary 24v Power: Aux 24v O/P +, Aux 24v O/P -

250mA of auxiliary 24v DC power is available here. It is recommended that additional Power Supply Units be installed to provide power for additional loads.

Remote Alarm Output: Remote Alarm O/P +/-

The remote alarm output may be used to connect a standard 24v DC conventional relay. This is monitored for short circuit and open circuit with a 4K7 ohm 'End Of Line' resistor and is rated at 24v DC 250mA. The relay operates when the control panels enters the fire state and deactivates when the system is reset. Any relays must be dioded. See the section on relays for further information.

Remote Alarm input: Alarm I/P

The Remote alarm input is a non-latching input suitable for interfacing to other fire panels. Simply apply auxiliary –ve (0v) to this terminal and its chosen function will operate as follows;

Mode 1 – Timed Class Change

On application of a 0v trigger, the sounders will operate for 10 seconds, but the control panel will show no indication, and neither the 'Fire Relay' nor the 'Remote Alarm Output' will operate.

Mode 2 – Remote Alarm excluding 'Remote Alarm Output'

On application of a 0v trigger, the sounders will operate, the control panel will show 'Common Fire' and 'Remote Alarm Input' indication, the 'Fire Relay' will change state, but the 'Remote Alarm Output' will not operate. This will reset when the trigger condition is removed.

Mode 3 – Class Change

On application of a 0v trigger, the sounders will operate until the trigger condition is removed, but the control panel will show no indication, and neither the 'Fire Relay' nor the 'Remote Alarm Output' will operate.

Mode 4 – Remote Alarm

On application of a 0v trigger, the sounders will operate, the control panel will show 'Common Fire', 'Remote Alarm Input' and 'Remote Alarm Output' indication, and the 'Fire Relay' and the 'Remote Alarm Output' will change state. This will reset when the trigger condition is removed.

Repeater Outputs: Z1, Z2, Z3, Z4, Flt

The repeater output will change to 0v when the relevant state is present, ie, the 'Z1' terminal will become 0v when zone one is in the fire state. An Led or low current relay may be operated if connected between this terminal and auxiliary 24v positive. Any relays must be dioded. See the section on relays for further information.

Repeater Inputs: EVAC, SIL, RST

These inputs require that a switched 0v trigger is applied in order for the relevant action to take place as follows;

EVAC- Evacuate Input

On application of the 0v trigger input the sounders will operate, the control panel will show 'Common Fire' and 'Remote Alarm Output' indication, and the 'Fire Relay' and the 'Remote Alarm Output' will change state. This will latch in place and the control panel must be reset to clear the event.

SIL – Silence Input

On application of the 0v trigger input the alarm sounders will stop if they were operating.

RST - Reset Input

On application of the 0v trigger input the system will reset.

Fire Relay: NO, COM, NC

The fire relay provides a set of volt free single pole changeover contacts rated at 30v DC 1A. This contact will change state when the control panel enters the fire state, and remain so until the system is reset.

Fault Relay: NO, COM, NC

The fault relay provides a set of volt free single pole changeover contacts rated at 30v DC 1A. This contact will change state when the control panel enters the fault state, and remain so until the fault condition is cleared.

Conventional Sounder Circuit: BELL OUTPUT +/-

The conventional sounder circuit may be used to connect a standard sounders or strobe circuit. This is monitored for short circuit and open circuit with a 4K7 ohm 'End Of Line' resistor and is rated at 24v DC 500mA. The alarm sounders operate when the control panel enters the fire state and deactivates when the system is silenced.

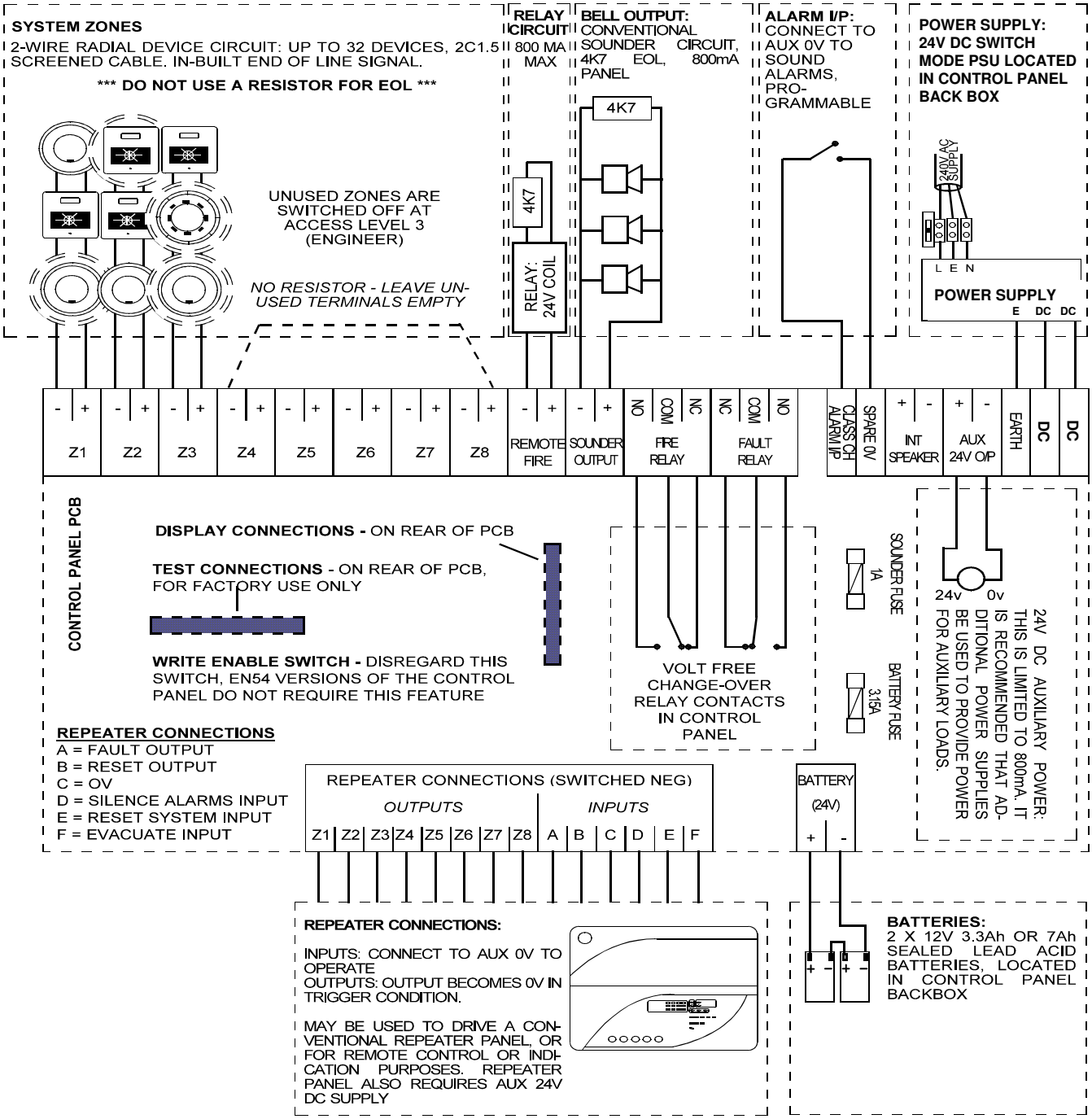
Device circuits: ZONE 1/2/3/4 +/-

The Twinflex devices may be connected in radial circuits utilising the in built 'End Of Line' signal within the last device. NB/ Do not use a resistor for 'End Of Line' on the zones. Unused zones must be programmed off. See the programming section for further details.

Fuses

Bell Fuse - Located on PCB adjacent Bell Output terminals .	500mA Fast
Battery Fuse – Located in line in the positive battery lead .	3A Fast
Mains Fuse – Located in the back box adjacent to the transformer	T315mA Anti Surge

8 Zone Panels


SYSTEM ZONES
2-WIRE RADIAL DEVICE CIRCUIT: UP TO 32 DEVICES, 2C1.5 SCREENED CABLE. IN-BUILT END OF LINE SIGNAL.
*** DO NOT USE A RESISTOR FOR EOL ***
UNUSED ZONES ARE SWITCHED OFF AT ACCESS LEVEL 3 (ENGINEER)
NO RESISTOR - LEAVE UNUSED TERMINALS EMPTY
RELAY CIRCUIT 800 MA MAX
4K7
RELAY: 24V COIL
BELL OUTPUT: CONVENTIONAL SOUNDER CIRCUIT, 4K7 EOL, 800mA PANEL
4K7
ALARM I/P: CONNECT TO AUX 0V TO SOUND ALARMS, PROGRAMMABLE
POWER SUPPLY: 24V DC SWITCH MODE PSU LOCATED IN CONTROL PANEL BACK BOX
MAINS
L E N
POWER SUPPLY
E DC DC
Z1 Z2 Z3 Z4 Z5 Z6 Z7 Z8
REMOTE FIRE
SOUNDER OUTPUT
NO COM NC
FIRE RELAY
NC COM NO
FAULT RELAY
CLASS CH ALARM I/P
SPARE 0V
INT SPEAKER
AUX 24V O/P
EARTH
DC DC
CONTROL PANEL PCB
DISPLAY CONNECTIONS - ON REAR OF PCB
TEST CONNECTIONS - ON REAR OF PCB, FOR FACTORY USE ONLY
WRITE ENABLE SWITCH - DISREGARD THIS SWITCH, EN54 VERSIONS OF THE CONTROL PANEL DO NOT REQUIRE THIS FEATURE
VOLT FREE CHANGE-OVER RELAY CONTACTS IN CONTROL PANEL
SOUNDER FUSE 1A
BATTERY FUSE 3.15A
24v 0v
24V DC AUXILIARY POWER. THIS IS LIMITED TO 800mA. IT IS RECOMMENDED THAT ADDITIONAL POWER SUPPLIES BE USED TO PROVIDE POWER FOR AUXILIARY LOADS.
REPEATER CONNECTIONS
A = FAULT OUTPUT
B = RESET OUTPUT
C = OV
D = SILENCE ALARMS INPUT
E = RESET SYSTEM INPUT
F = EVACUATE INPUT
REPEATER CONNECTIONS (SWITCHED NEG)
OUTPUTS
INPUTS
Z1 Z2 Z3 Z4 Z5 Z6 Z7 Z8 A B C D E F
BATTERY (24V)
REPEATER CONNECTIONS:
INPUTS: CONNECT TO AUX 0V TO OPERATE
OUTPUTS: OUTPUT BECOMES 0V IN TRIGGER CONDITION.
MAY BE USED TO DRIVE A CONVENTIONAL REPEATER PANEL, OR FOR REMOTE CONTROL OR INDICATION PURPOSES. REPEATER PANEL ALSO REQUIRES AUX 24V DC SUPPLY
BATTERIES:
2 X 12V 3.3Ah OR 7Ah SEALED LEAD ACID BATTERIES, LOCATED IN CONTROL PANEL BACKBOX

Device circuits: ZONE 1/2/3/4/5/6/7/8 +/-

The Twinflex devices may be connected in radial circuits utilising the in built 'End Of Line' signal within the last device. NB/ Do not use a resistor for 'End Of Line' on the zones. Unused zones must be programmed off. See the programming section for further details.

Remote Alarm Output: Remote Fire O/P +/-

The remote alarm output may be used to connect a standard 24v DC conventional relay. This is monitored for short circuit and open circuit with a 4K7 ohm 'End Of Line' resistor and is rated at 24v DC 800mA. The relay operates when the control panels enters the fire state and deactivates when the system is reset. Any relays must be dioded. See the section on relays for further information.

Conventional Sounder Circuit: SOUNDER +/-

The conventional sounder circuit may be used to connect a standard sounder or strobe circuit. This is monitored for short circuit and open circuit with a 4K7 ohm 'End Of Line' resistor and is rated at 24v DC 800mA. The alarm sounders operate when the control panel enters the fire state and deactivates when the system is silenced

Fire Relay: NO, COM, NC

The fire relay provides a set of volt free single pole changeover contacts rated at 30v DC 1A. This contact will change state when the control panel enters the fire state, and remain so until the system is reset.

Fault Relay: NO, COM, NC

The fault relay provides a set of volt free single pole changeover contacts rated at 30v DC 1A. This contact will change state when the control panel enters the fault state, and remain so until the fault condition is cleared.

Remote Alarm input: Alarm I/P / Class Change

The Remote alarm input is a non-latching input suitable for interfacing to other fire panels. Simply apply auxiliary 0v to this terminal and its chosen function will operate as follows;

Mode 1 – Timed Class Change

On application of a 0v trigger, the sounders will operate for 10 seconds, but the control panel will show no indication, and neither the 'Fire Relay' nor the 'Remote Alarm Output' will operate.

Mode 2 – Remote Alarm excluding 'Remote Alarm Output'

On application of a 0v trigger, the sounders will operate, the control panel will show 'Common Fire' and 'Remote Alarm Input' indication, the 'Fire Relay' will change state, but the 'Remote Alarm Output' will not operate. This will reset when the trigger condition is removed.

Mode 3 – Class Change

On application of a 0v trigger, the sounders will operate until the trigger condition is removed, but the control panel will show no indication, and neither the 'Fire Relay' nor the 'Remote Alarm Output' will operate.

Mode 4 – Remote Alarm

On application of a 0v trigger, the sounders will operate, the control panel will show 'Common Fire', 'Remote Alarm Input' and 'Remote Alarm Output' indication, and the 'Fire Relay' and the 'Remote Alarm Output' will change state. This will reset when the trigger condition is removed.

Internal Speaker: INT SPEAKER +/-

This feature is not currently in use.

Auxiliary 24v Power: Aux 24v O/P +, Aux 24v O/P -

800mA of auxiliary 24v DC power is available here. It is recommended that additional Power Supply Units be installed to provide power for additional loads.

Power Supply: DC, DC, EARTH

The DC input is connected to the red and black leads coming from the switch mode power supply mounted within the back box, and is the primary power supply for the system.

Note: Previously the control panel used a 24V AC input, connected to a transformer mounted within the back box. Ensure that the correct type of power supply is utilised.

Repeater Outputs: Z1, Z2, Z3, Z4, A = FLT O/P, B = RESET O/P

The repeater output will change to 0v when the relevant state is present, ie, the 'Z1' terminal will become 0v when zone one is in the fire state. An Led or low current relay may be operated if connected between this terminal and auxiliary 24v positive. Any relays must be dioded. See the section on relays for further information.

Repeater Inputs: D = SILENCE, E = RESET, F = EVAUATE

These inputs require that a switched 0v trigger is applied in order for the relevant action to take place as follows;

F = EVAC - Evacuate Input

On application of the 0v trigger input the sounders will operate, the control panel will show 'Common Fire' and 'Remote Alarm Output' indication, and the 'Fire Relay' and the 'Remote Alarm Output' will change state. This will latch in place and the control panel must be reset to clear the event.

D = SIL – Silence Input

On application of the 0v trigger input the alarm sounders will stop if they were operating.

E = RST - Reset Input

On application of the 0v trigger input the system will reset.

Battery Connections: BAT+, BAT-

The battery terminals require 24v from 2 x 3.3 Ah or 2 x & Ah sealed lead acid batteries, connected in series, in order to provide secondary backup power when the primary power fails. This input is protected by the 3A fuse located on the PCB.

Note that earlier versions of the 8 zone control panel had two sets of battery connections and required a 12v battery on each. With the current versions a link wire is provided to allow the batteries to be connected in series to the single set of connectors.

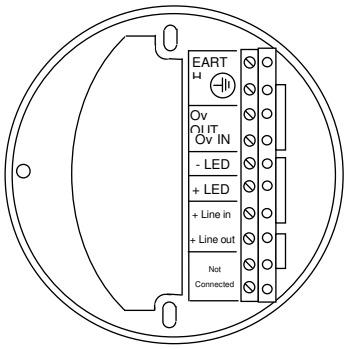
Fuses

Sounder Fuse - Located on PCB near center.	1A Fast
Remote Fire Fuse - Located on PCB adjacent Fire relay . . .	1A Fast
Battery Fuse – Located on PCB adjacent to battery terminals . .	3A Fast
Mains Fuse – Located in the back box adjacent to the transformer .	3AT Anti Surge

Twinflex Multipoint Detector

Installation 1st Stage

The Multipoint Detector is available with or without an integral alarm sounder. If your device has no sounder then ignore all reference to integral sounders on these installation instructions. This device is compatible only with Twinflex control panels and their associated detection and alarm equipment and may be installed on the same zone as the Manual Call Point, Hatari sounders and input/output modules.



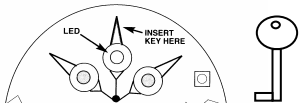
Fix the detector base in a suitable position using the two screw holes provided remembering to allow enough space for the correct termination of the appropriate fire resistant cable.

The cabling should be 2 core 1.5 mm^2 and earth/screened and fire resistant, of an MICC or FP200 equivalent type and is to be in the form of a 2-core radial circuit from the control panel to the last device. **Do not spur from the circuit.**

Please remember that all high voltage testing must be carried out before the installation of any electronic devices as this may cause damage. The installer needs to provide proof of zone continuity readings etc., to enable commissioning to proceed. Use the form provided at the rear of this manual to record your readings.

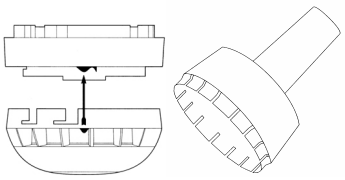
Installation 2nd Stage

Once all testing has been carried out on the cabling and 'continuity & integrity' has been proven, then the Multipoint unit may be assembled. Set the on-board dil switches as required before inserting the Electronics Module, locating the pins and gently pushing home. The Electronics Module may be removed by inserting the Key into the triangular slot adjacent to the LED, twisted to lock and then pulled to ease the Module out. Do not pull on the optical transmitter and receiver pair as you may misalign them.

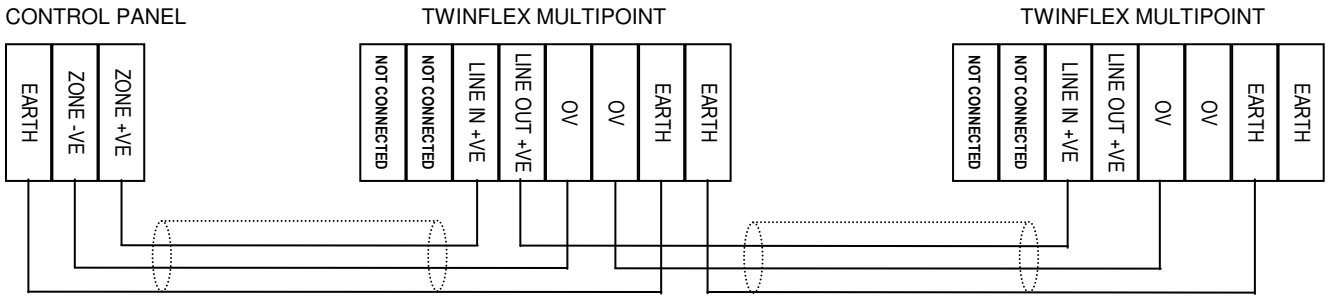


ELECTRONICS MODULE & REMOVAL KEY

The Optical Chamber may then be offered up and twisted to locate until the catch operates. Remember not to force this item; if the Electronics Module is correctly located then the Optical Chamber should locate with very little force. The Optical Chamber may be removed with the Head Removal Tool. Ensure that the Optical Chamber is installed when the system is powered up, or a fault condition will be generated. See page 18 for further details.


OPTICAL CHAMBER & HEAD REMOVAL TOOL

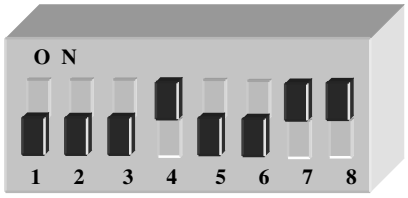
Connections



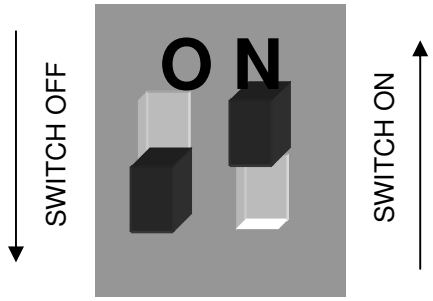
Power Up

The Multipoint detector requires approximately one minute on power up to boot up its processor and settle down to normal operation. Do not test the detector during this time. Ensure that the Optical Chamber is installed when the system is powered up, or a fault condition will be generated.

DIL Switch Settings



ie, the switch above is set to EOL off, logical link off, SM2, SP2, Volume High



The detector DIL switches may be used to program the operation of the Multipoint Detector. They may be altered whilst the detector is still powered or the system may be powered down completely.

The last device on the circuit must have the EOL signal enabled (switch number 1 in the 'ON' position).

Do not use a resistor as an End of Line device.

If a heat detection mode is selected then use the 'HEAT' labels supplied to label the base of the detector clearly.

		DIL SWITCH SETTINGS							
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
EOL Signal	Disabled (no end of line signal)	OFF							
	Enabled	ON							
Detection Mode	Disabled (no detection)			OFF	OFF	OFF			
	Smoke 1			ON	OFF	OFF			
	Smoke 2			OFF	ON	OFF			
	Smoke3			ON	ON	OFF			
	Heat 1			ON	OFF	ON			
	Heat 2			OFF	ON	ON			
	Heat 3			ON	ON	ON			
	Smoke 2 / Heat 2 Combined			OFF	OFF	ON			
Logical Link *	Logical link disabled		OFF						
	Logical link enabled		ON						
Sound Pattern	Disabled (no sound)						OFF	OFF	
	Sound 1 (Continuous buzz at 970 Hz)						ON	OFF	
	Sound 2 (Alternate tone at 800/970 Hz)						OFF	ON	
	Sound 3 (Sweep up tone at 800 to 970 Hz)						ON	ON	
Sounder Volume	Low – 75dB								OFF
	High – 90dB								ON

* For use with Twinflex Checkpoint Plus Control panels only. The setting will be ignored on standard systems. With Logical Link enabled the sounder in that device only will operate during the confirmation period, and with the Logical Link disabled all the sounders in the same zone as the device in alarm will operate during the confirmation period.

Fire Detection Modes.

Detection Mode	Description	Temp (°C)
SM0	No smoke detection	
SM1	Standard sensitivity optical with high thermal enhancement. This mode may be classed as an ionisation equivalent. Ensure environment is clean and suitable for a **rapid response**.	
SM2	Standard sensitivity optical with normal thermal enhancement. This is a **standard** smoke detector, with standard thermal enhancement to help its stability.	
SM3	**Low sensitivity** optical with transient smoke rejection. The smoke density must be kept up for a longer time period, so this is ideal for bedrooms with en-suite showers, etc.	
HM0	No heat detection	
HM1	Standard temperature**, rate of rise** enhanced, (grade A1/R), Not for use in kitchens.	58
HM2	**Standard fixed** temperature, normal response, (grade A1/S). Fine for domestic kitchens.	58
HM3	**High fixed** temperature, (grade C/S). Ideal for boiler rooms and commercial kitchens.	90

LED Indication.

State	On	Interval
fire	ON	-
fault	50ms	1.3s
EOL	50ms	5s
normal	0.1ms	20s

Sound Output Levels.

Description	Volume dB(A) @ 1m	Quantity per zone	Loading (max 32 per zone)
Low	75	32 max	1 SLU
High	90	32 max	1 SLU

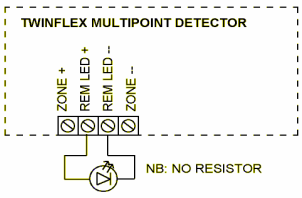
Note that quantities of other device types need to be included as well, so see the relevant sections on that device for their loadings.

The above readings are taken at 1 meter in standard reverberant surroundings to simulate field conditions.

Remote Indication LEDs

If a 'Remote Indication LED' is required, then an LED may be connected between the 'Remote LED + / -' terminals.

Note that the LED requires no resistor. Most standard LEDs will have various options and will have connections marked suitable for 'Intelligent Systems'.



Head Contamination Warnings

If a smoke detector becomes dusty its operation is affected, either making it more prone to false alarms, or in rare cases reducing its sensitivity.

Warning of head contamination is very simple. The Multipoint LED will flash once approximately every 1.5 seconds. At the control panel, the common 'Fault' LED will flash, the buzzer will sound and the relevant 'Zone Fault' LED will flash at approximately twice the speed of the buzzer.

Replacing Contaminated Optical Chambers

When an optical chamber becomes contaminated we recommend replacing it with a new replacement item. Cleaning an old chamber will not give satisfactory results and the re-assembly may very easily result in a misalignment of the optical path. Greasy residues often build up over time, and the optical path could easily be made worse if an attempt is made to clean it.

We recommend replacing any contaminated units with new ones in order to maintain the correct performance of your system.

Firstly investigate the control panel indications as above, then check the devices in the relevant zone to locate the Multipoint detector indicating 'Fault'.

Remove the Optical Chamber with the Head Removal Tool and replace it with a new one. The fault indication should clear in 30-45 seconds and return to normal. If this does not happen then consider changing the Electronics Module as well, remembering to set the dil switches correctly, but this should be a rare occurrence.

It is advisable to disable all of the sounders and fire protection outputs whilst carrying out this routine as the device may go into the fire state, depending on the way in which the optical chamber affects the optical signal as it is removed or replaced.

Remember that any alterations to the system should be tested for correct operation before leaving site.

Testing

We recommend the use of suitable smoke test equipment such as the 'No Climb' SOLO 300 tester or an equivalent product. Testing with an aerosol can only may be generally successful, but in some circumstances may fail to trigger a device due to unseen drafts removing the spray before the device is triggered. The use of the correct test equipment, or the application of the dust cover will prevent this.

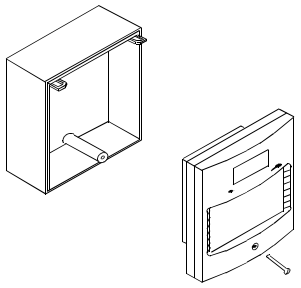
Due to the fact that the smoke detection modes are all 'thermally enhanced', it may be noticeable that on test the devices respond more slowly than may be expected. This is perfectly normal and is due to the fact that during a normal smoke test we have no heat present to cause the sensitivity to be enhanced.

Smoke mode 3 requires that the concentration of smoke is kept up for a longer period to trigger the device into alarm, so patience is required. Small regular applications of test smoke are best in order to avoid drenching the detector as this may result in sticky residues being left behind.

In order to test a detector which has been set to a heat mode we recommend the use of a 'No Climb' SOLO 400 tester, or an equivalent product. The SOLO 400 tester will also require a baffle to redirect the airflow (part number SH32038 - SOLO461-024 Baffle).

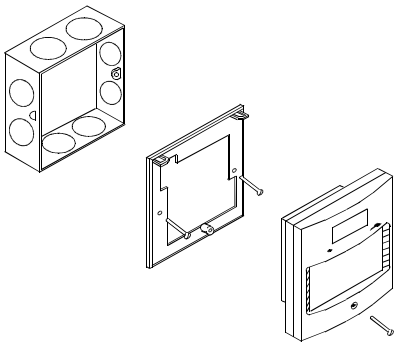
Twinflex Manual Call Point

Installation 1st Stage



The Manual Call Point is available with or without an integral alarm sounder. If your device has no sounder then ignore all reference to integral sounders on these installation instructions. This device is compatible only with Twinflex control panels and their associated detection and alarm equipment and may be installed on the same zone as the Multipoint detector/sounder, Hatari sounders and input/output modules.

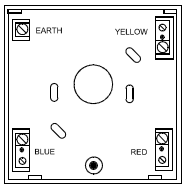
The cabling should be 2 core 1.5 mm^2 screened and fire resistant, of an MICC or FP200 equivalent type and is to be in the form of a 2-core radial circuit from the control panel to the last device. Do not spur from the circuit.



Please remember that all high voltage testing must be carried out before the installation of any electronic devices as this may cause damage. The installer needs to provide proof of zone continuity readings etc., to enable commissioning to proceed. Use the form provided at the rear of this manual to record your readings.

Surface Mounting

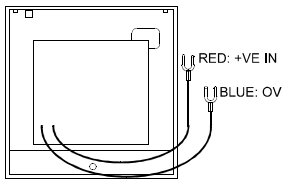
Fix the surface back box to a flat vertical surface using at least two of the four mounting holes provided. The back box may be drilled to allow cable access as required and a 20mm hole is already provided at the rear. Zone cabling may be connected to the terminals provided.



Flush Mounting

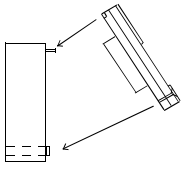
The Call Point may be flush mounted utilising the optional 'adapter-plate', combined with any standard single gang flush mounting back box (with a minimum internal depth of 25mm). After installing the back box securely, attach the bezel using the two screws provided, and terminate your cables directly into a flying terminal block.

NB/ Red = zone +ve, Blue = zone 0V



Installation 2nd Stage

Once all testing has been carried out on the cabling and 'continuity & integrity' has been proven, then the Manual Call Point unit may be installed.

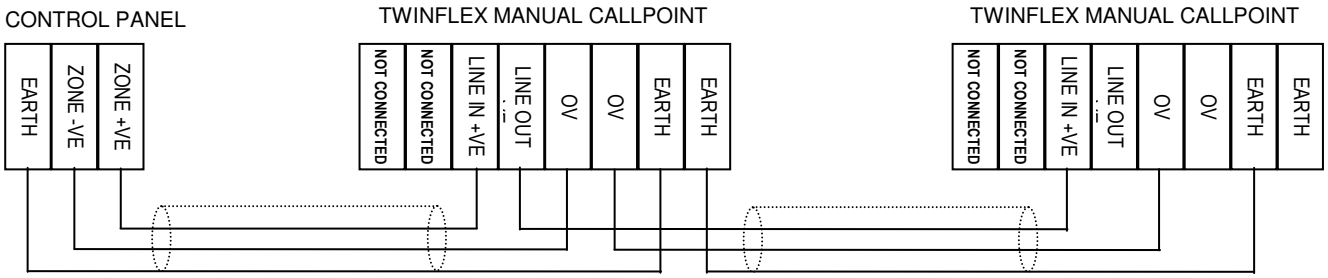


The Call Point is installed by locating the upper mounting spigots into the back box and then pushing the unit gently home. The single fixing screw may then be tightened as required.

Power Up

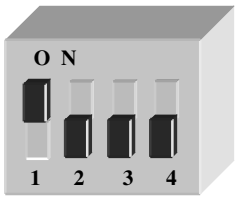
The Manual Call Point requires approximately one minute on power up to boot up its processor and settle down to normal operation. Do not test the manual call point during this time.

Connections

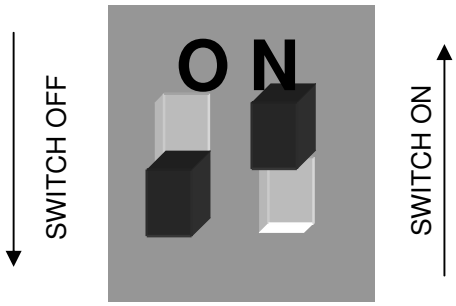


Note: Red = zone +ve, Blue = zone 0V

DIL Switch Settings



ie, the switch above is set to EOL on, volume low, Slow sweep up



The manual call point DIL switches may be used to program the operation of the manual call point. They may be altered whilst the detector is still powered or the system may be powered down completely.

The EOL switch will be identified on the label affixed to the device, ie, SW1 = EOL.

The last device on the circuit must have the EOL signal enabled (switch number 1 in the 'ON' position).

TWINFLEX CALLPOINT
NO SOUNDER
BATCH NO 2771
DATE 24/03/06
46/0400/04/40
SW1 = EOL
EOL / KEY TESTED
Made in UK
26/0369

Do not use a resistor as an End of Line device.

		DIL SWITCH SETTINGS			
		1	2	3	4
EOL Signal	Disabled (no end of line signal)	OFF			
	Enabled	ON			
Sounder Volume	Low – 75dB		OFF		
	High – 90dB		ON		
Sound Pattern	Sound 1 (Continuous buzz at 970 Hz)			ON	ON
	Sound 2 (Alternate tone at 800/970 Hz)			ON	OFF
	Sound 3 (Slow Sweep up at 500 to 1200 Hz)			OFF	OFF
	Sound 4 (French Tone at 440 – 550 Hz)			OFF	ON

Note: Early Rafiki Twinflex manual call points utilised different dil switch settings as below. The EOL switch will be identified on the label affixed to the device, ie, SW4 = EOL.

		DIL SWITCH SETTINGS			
		1	2	3	4
Sound Pattern	Sound 1 (Continuous buzz at 970 Hz)	ON	ON		
	Sound 2 (Alternate tone at 800/970 Hz)	OFF	ON		
	Sound 3 (Slow Sweep up at 500 to 1200 Hz)	OFF	OFF		
	Sound 4 (French Tone at 440 – 550 Hz)	ON	OFF		
Sounder Volume	Low – 75dB			OFF	
	High – 90dB			ON	
EOL Signal	Disabled (no end of line signal)				OFF
	Enabled				ON

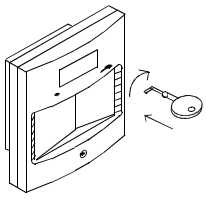
The sound level readings above are taken at 1 meter in standard reverberant surroundings to simulate field conditions.

LED Indication

State	On	Interval
Fire	50ms	0.33s
EOL	50ms	5s

Reset and Test

The Call Point contains a re-settable element, which latches in position when operated and does not need to be replaced. Inserting the key as shown and turning it clockwise until the element clicks back into place will reset the unit. Testing the Call Point may be carried out either by pressing the element or by using the key in the same manner as for resetting but without having pressed the element



Sound Output Levels.

Description	Volume dB(A) @ 1m	Quantity per zone	Loading (max 32 per zone)
Low	75	32 max	1 SLU
High	90	32 max	1 SLU

Note that quantities of other device types need to be included as well, so see the relevant sections on that device for their loadings.

The above readings are taken at 1 meter in standard reverberant surroundings to simulate field conditions.

Weatherproof Manual Call Point

The weatherproof Manual Call Point is similar to the standard Manual Call Point, except that it is rated at IP55.

Fix the surface back box carefully to a flat vertical surface, making sure to not compromise the IP rating of the housing.

Ensure that you use suitable cable glands to terminate the cables in order to maintain the IP rating

Twinflex Hatari Sounder

Installation 1st Stage

The Hatari sounder is available in Twinflex or conventional formats. The Twinflex Hatari sounder is compatible only with Twinflex control panels and their associated detection and alarm equipment and may be installed on the same zone as the Twinflex Multipoint detector/sounder, Twinflex Manual Call Points and Twinflex input/output modules. The Conventional Hatari sounder must only be installed on a conventional sounder circuit.

Fix the sounder base to a flat vertical surface using the two mounting holes provided. A 20mm hole is already provided at the rear for cable entry. Zone cabling may be connected to the terminals provided.

The cabling should be 2 core 1.5 mm^2 screened and fire resistant, of an MICC or FP200 equivalent type and is to be in the form of a 2-core radial circuit from the control panel to the last device. Do not spur from the circuit.

Please remember that all high voltage testing must be carried out before the installation of any electronic devices as this may cause damage. The installer needs to provide proof of zone continuity readings etc., to enable commissioning to proceed. Use the form provided at the rear of this manual to record your readings.

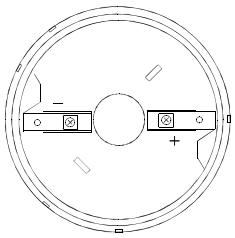
Installation 2nd Stage

Once all testing has been carried out on the cabling and 'continuity & integrity' has been proven, then the Hatari sounder may be installed.

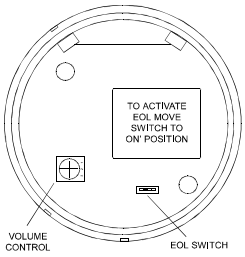
Two white plastic anti tamper clips are provided which slot into the base to provide a locking device. The Head Removal Tool is then required to release the sounder from its base.

The sounder is installed by inserting it into its base, and rotating it gently, until it locks in place.

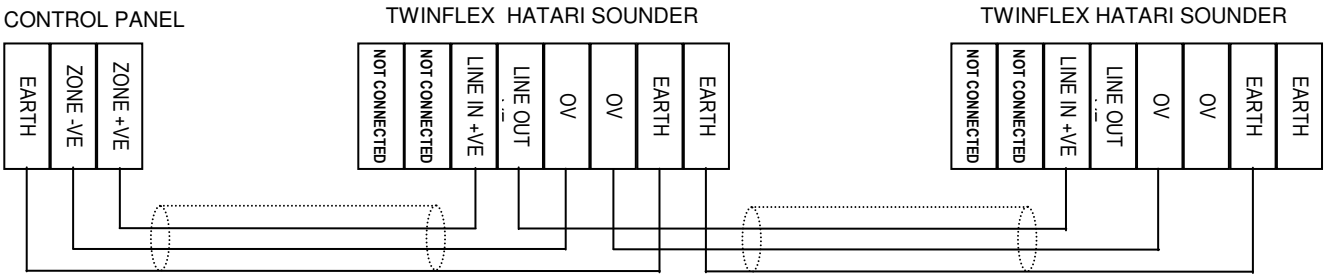
Connections



Hatari Base



Rear of Hatari

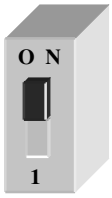


Note: Red = zone +ve, Blue = zone 0V

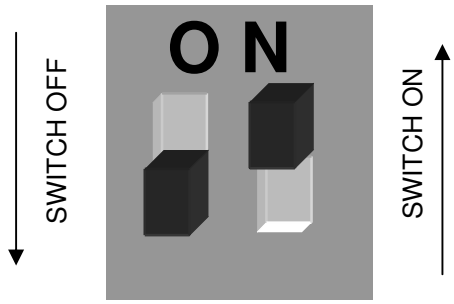
Power Up

The Hatari Sounder requires approximately one minute on power up to boot up its processor and settle down to normal operation. Do not test the sounder during this time.

DIL Switch Settings



ie, the switch above is set to EOL on,



The sounder DIL switches may be used to program the operation of the End of Line signal. They may be altered whilst the detector is still powered or the system may be powered down completely.

The last device on the circuit must have the EOL signal enabled (switch number 4 in the 'ON' position).

Do not use a resistor as an End of Line device.

		DIL SWITCH SETTINGS
		1
EOL Signal	Disabled (no end of line signal)	OFF
	Enabled	ON

Sound Output Levels.

Description	Volume dB(A) @ 1m	Quantity per zone	Loading (max 32 per zone)
Maximum	103	6	6 SLU

The Rotary Volume Potentiometer located on the rear of the sounder may be used to adjust the volume if a lower volume is required.

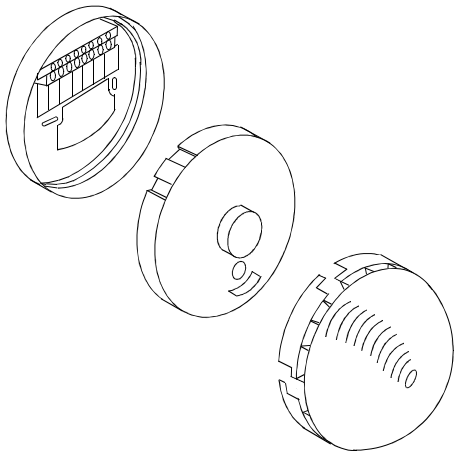
Note that quantities of other device types need to be included as well, so see the relevant sections on that device for their loadings.

One zone will accept a total of 32 'Sounder Loading Units'. The Hatari sounder counts for approximately 6 'SLU' whereas the Manual Call Point with sounder and the Multipoint with sounder both count for 1 'SLU' each, eg, a suitable loading on one zone would be 2 x Hatari sounder, 6 x MCP sounder and 14 x Multipoint with sounder.

The sound level readings above are taken at 1 meter in standard reverberant surroundings to simulate field conditions.

Twinflex Flashpoint

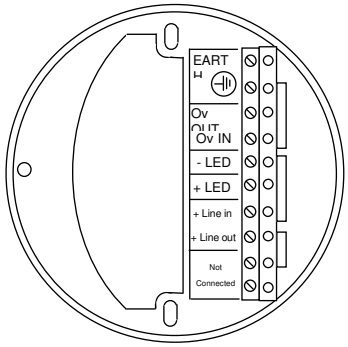
Installation 1st Stage



The Flashpoint sounder / beacon is available in Twinflex or conventional formats. The Twinflex Flashpoint sounder/beacon is compatible only with Twinflex control panels and their associated detection and alarm equipment and may be installed on the same zone as other Twinflex devices. The Conventional Flashpoint sounder/beacon must only be installed on a conventional sounder circuit.

Fix the sounder base to a flat vertical or horizontal surface using the two mounting holes provided. Zone cabling may be connected to the terminals provided.

The cabling should be 2 core 1.5 mm^2 screened and fire resistant, of an MICC or FP200 equivalent type and is to be in the form of a 2-core radial circuit from the control panel to the last device. Do not spur from the circuit.

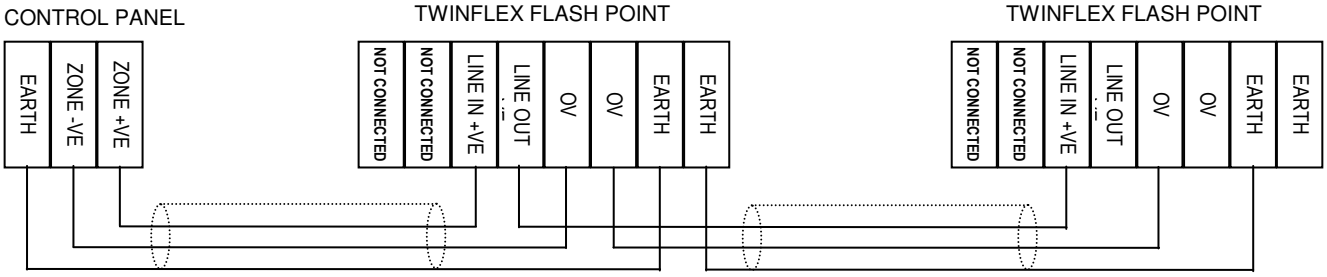


Please remember that all high voltage testing must be carried out before the installation of any electronic devices as this may cause damage. The installer needs to provide proof of zone continuity readings etc., to enable commissioning to proceed. Use the form provided at the rear of this manual to record your readings.

Installation 2nd Stage

Once all testing has been carried out on the cabling and 'continuity & integrity' has been proven, then the Flashpoint sounder/beacon may be assembled. To insert the Electronics Module, locate the pins and gently push it home.

Connections

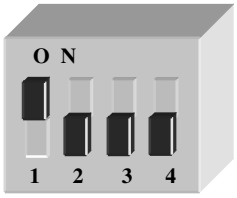


Note: Red = zone +ve, Blue = zone 0V

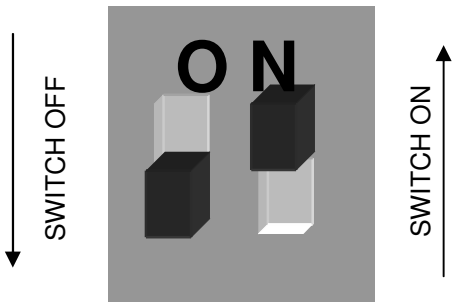
Power Up

The Flashpoint Sounder requires approximately one minute on power up to boot up its processor and settle down to normal operation. Do not test the sounder during this time.

DIL Switch Settings



ie, the switch above is set to EOL on,
volume low, Slow sweep up



The sounder DIL switches may be used to program the operation of the End of Line signal. They may be altered whilst the detector is still powered or the system may be powered down completely.

The last device on the circuit must have the EOL signal enabled (switch number 1 in the 'ON' position).

Do not use a resistor as an End of Line device.

		DIL SWITCH SETTINGS			
		1	2	3	4
EOL Signal	Disabled (no end of line signal)	OFF			
	Enabled	ON			
Sounder Volume	Low – 75dB		OFF		
	High – 90dB		ON		
Sound Pattern	Sound OFF			ON	ON
	Dual Tone UK Evac (800/970 Hz)			ON	OFF
	Slow Sweep up (500 to 1200 Hz)			OFF	OFF
	Dual Tone French Warble (440 – 550 Hz)			OFF	ON

Note: Early Rafiki Twinflex Flashpoints utilised different dil switch settings. The EOL switch will be identified on the label affixed to the device, ie, SW4 =EOL or SW1=EOL.

The sound level readings above are taken at 1 meter in standard reverberant surroundings to simulate field conditions

Sound Output Levels.

Description	Volume dB(A) @ 1m	Quantity per zone	Loading (max 32 per zone)
Low + Beacon	75	32 max	1 SLU
High + Beacon	90	32 max	2 SLU

Note that quantities of other device types need to be included as well, so see the relevant sections on that device for their loadings.

The above readings are taken at 1 meter in standard reverberant surroundings to simulate field conditions.

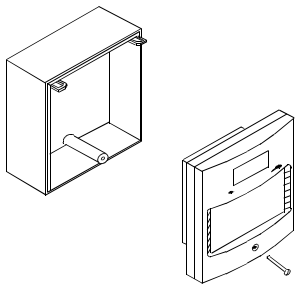
Weatherproof Flashpoint

The weatherproof Flashpoint is similar to the standard Flashpoint, except that it has no sounder (ie visual indication only) and is rated at IP55.

Fix the surface back box carefully to a flat vertical surface, making sure to not compromise the IP rating of the housing.

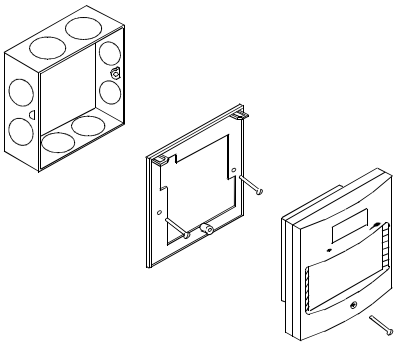
Ensure that you use suitable cable glands to terminate the cables in order to maintain the IP rating

Twinflex Soundpoint



Installation 1st Stage

The Soundpoint is available in Twinflex or conventional formats. The Twinflex Soundpoint is compatible only with Twinflex control panels and their associated detection and alarm equipment and may be installed on the same zone as other Twinflex devices. The Conventional Soundpoint must only be installed on a conventional sounder circuit.

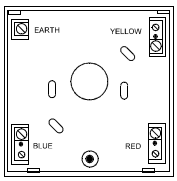


The cabling should be 2 core 1.5 mm^2 screened and fire resistant, of an MICC or FP200 equivalent type and is to be in the form of a 2-core radial circuit from the control panel to the last device. Do not spur from the circuit.

Please remember that all high voltage testing must be carried out before the installation of any electronic devices as this may cause damage. The installer needs to provide proof of zone continuity readings etc., to enable commissioning to proceed. Use the form provided at the rear of this manual to record your readings.

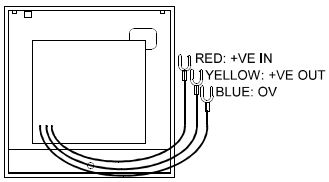
Surface Mounting

Fix the surface back box to a flat vertical surface using at least two of the four mounting holes provided. The back box may be drilled to allow cable access as required and a 20mm hole is already provided at the rear. Zone cabling may be connected to the terminals provided.



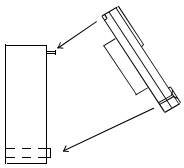
Flush Mounting

For flush mounting, utilise the optional 'adapter-plate', combined with any standard single gang flush mounting back box (with a minimum internal depth of 25mm). After installing the back box securely, attach the bezel using the two screws provided, and terminate your cables directly into a flying terminal block.



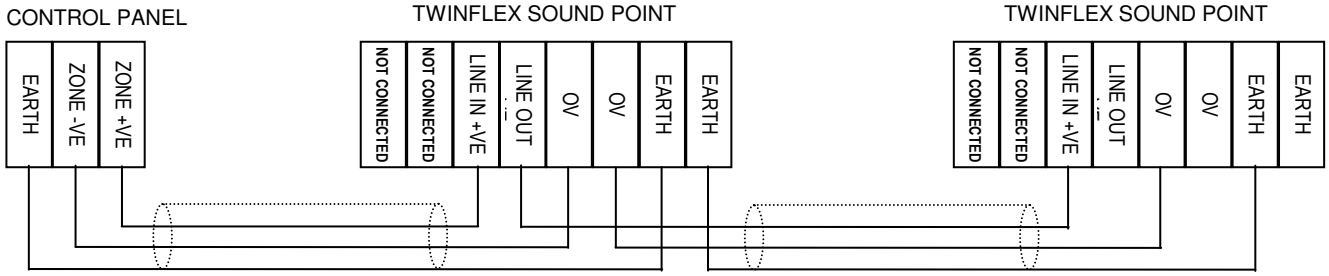
Installation 2nd Stage

Once all testing has been carried out on the cabling and 'continuity & integrity' has been proven, then the Soundpoint unit may be installed.



The Soundpoint is installed by locating the upper mounting spigots into the back box and then pushing the unit gently home. The single fixing screw may then be tightened as required.

Connections

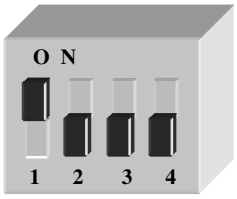


Note: Red = zone +ve, Blue = zone 0V

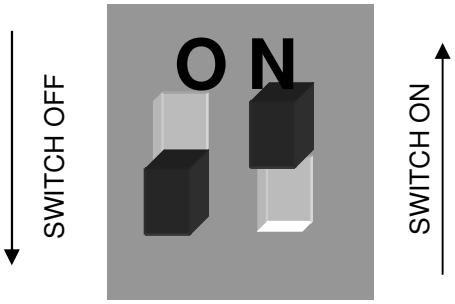
Power Up

The Soundpoint requires approximately one minute on power-up to boot-up its' processor and settle down to normal operation. Do not test the sounder during this time.

DIL Switch Settings



ie, the switch above is set to EOL on, volume low, Slow sweep up



The sounder DIL switches may be used to program the operation of the End of Line signal. They may be altered whilst the detector is still powered or the system may be powered down completely.

The last device on the circuit must have the EOL signal enabled (switch number 1 in the 'ON' position).

Do not use a resistor as an End of Line device.

		DIL SWITCH SETTINGS			
		1	2	3	4
EOL Signal	Disabled (no end of line signal)	OFF			
	Enabled	ON			
Sounder Volume	Low – 75dB		OFF		
	High – 90dB		ON		
Sound Pattern	Sound OFF			ON	ON
	Dual Tone UK Evac (800/970 Hz)			ON	OFF
	Slow Sweep up (500 to 1200 Hz)			OFF	OFF
	Dual Tone French Warble (440 – 550 Hz)			OFF	ON

Note: Early Rafiki Twinflex Flashpoints utilised different dil switch settings. The EOL switch will be identified on the label affixed to the device, ie, SW4 =EOL or SW1=EOL
The sound level readings above are taken at 1 meter in standard reverberant surroundings to simulate field conditions

Sound Output Levels.

Description	Volume dB(A) @ 1m	Quantity per zone	Loading (max 32 per zone)
Low	75	32 max	1 SLU
High	90	32 max	1 SLU

Note that quantities of other device types need to be included as well, so see the relevant sections for each device for their loadings.
The above readings are taken at 1 meter in standard reverberant surroundings to simulate field conditions.

Weatherproof Soundpoint

The weatherproof Soundpoint is similar to the standard Soundpoint, except that it is rated at IP55.

Fix the surface back box carefully to a flat vertical surface, making sure to not compromise the IP rating of the housing.

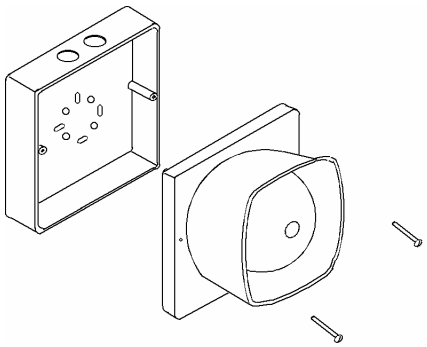
Ensure that you use suitable cable glands to terminate the cables in order to maintain the IP rating

Twinflex Hipoint

Installation 1st Stage

The Hipoint is compatible only with Twinflex control panels and their associated detection and alarm equipment and may be installed on the same zone as other Twinflex devices.

Fix the back box to a flat vertical surface using at least two of the four mounting holes provided. Cables may have access through the 20mm knockouts at the top & bottom of the box, and may then be terminated directly into the terminals according to the terminal labels.



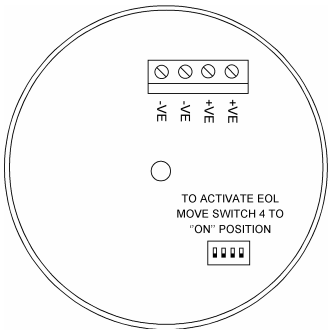
The cabling should be 2 core 1.5 mm^2 screened and fire resistant, of an MICC or FP200 equivalent type and is to be in the form of a 2-core radial circuit from the control panel to the last device. Do not spur from the circuit.

Please remember that all high voltage testing must be carried out before the installation of any electronic devices as this may cause damage. The installer needs to provide proof of zone continuity readings etc., to enable commissioning to proceed. Use the form provided at the rear of this manual to record your readings.

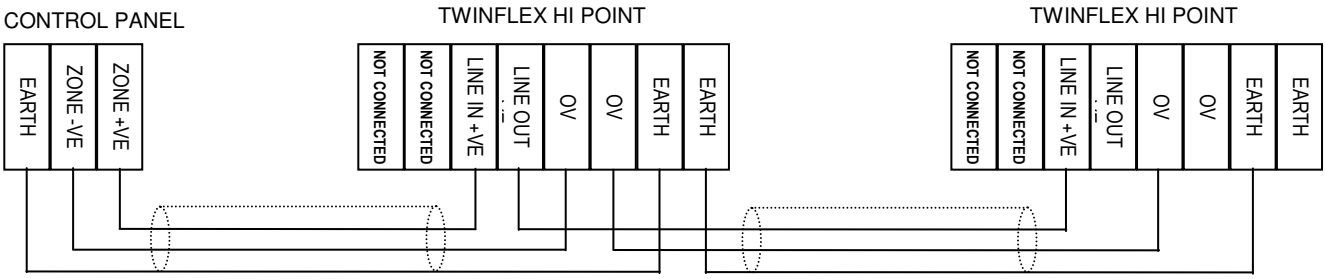
Installation 2nd Stage

Once all testing has been carried out on the cabling and 'continuity & integrity' has been proven, then the Hipoint unit may be installed.

The Soundpoint is installed by locating using the two fixing screws provided.



Connections

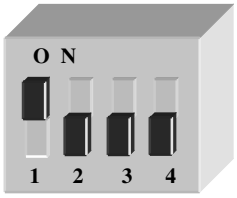


Note: Red = zone +ve, Blue = zone 0V

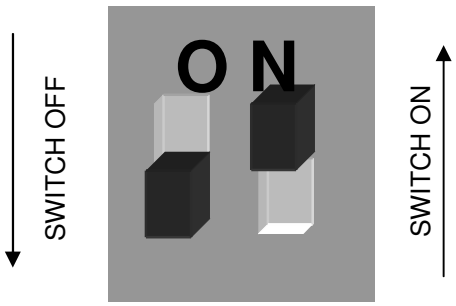
Power Up

The Hipoint requires approximately one minute on power-up to boot-up its processor and settle down to normal operation. Do not test the sounder during this time.

DIL Switch Settings



ie, the switch above is set to EOL on, volume low, Slow sweep up



The sounder DIL switches may be used to program the operation of the End of Line signal. They may be altered whilst the detector is still powered or the system may be powered down completely.

The last device on the circuit must have the EOL signal enabled (switch number 1 in the 'ON' position).

Do not use a resistor as an End of Line device.

		DIL SWITCH SETTINGS			
		1	**2**	**3**	**4**
EOL Signal	Disabled (no end of line signal)	OFF			
	Enabled	ON			
Sounder Volume	Low – 75dB		OFF		
	High – 90dB		ON		
Sound Pattern	Sound OFF			ON	ON
	Dual Tone UK Evac (800/970 Hz)			ON	OFF
	Slow Sweep up (500 to 1200 Hz)			OFF	OFF
	Dual Tone French Warble (440 – 550 Hz)			OFF	ON

Note: Early Rafiki Twinflex Flashpoints utilised different dil switch settings. The EOL switch will be identified on the label affixed to the device, ie, SW4 =EOL or SW1=EOL

The sound level readings above are taken at 1 meter in standard reverberant surroundings to simulate field conditions

Sound Output Levels

Description	**Volume dB(A) @ 1m**	**Quantity per zone**	**Loading (max 32 per zone)**
Low	75	32 max	1 SLU
High	90	32 max	1 SLU

Note that quantities of other device types need to be included as well, so see the relevant sections on that device for their loadings.

The above readings are taken at 1 meter in standard reverberant surroundings to simulate field conditions.

Twinflex Output Module

Installation 1st Stage

The Output Module is compatible only with Twinflex control panels and their associated detection and alarm equipment and may be installed on the same zone as Multipoint detectors, Manual Call Points and Hatari sounders.

Fix the back box in a suitable position using the two screw holes provided remembering to allow enough space for the correct termination of the appropriate fire resistant cable.

The cabling should be 2 core 1.5 mm^2 screened and fire resistant, of an MICC or FP200 equivalent type and is to be in the form of a 2-core radial circuit from the control panel to the last device. Do not spur from the circuit.

The output module requires a 24V DC supply, which may me derived from the main control panel, or from a separate Power Supply Unit with a suitable battery backup and fault monitoring.

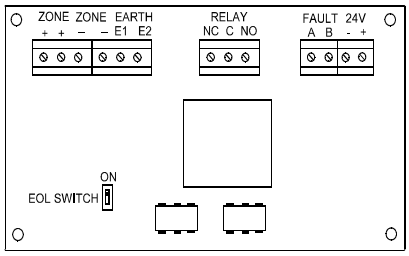
Please remember that all high voltage testing must be carried out before the installation of any electronic devices as this may cause damage. The installer needs to provide proof of zone continuity readings etc., to enable commissioning to proceed. Use the form provided at the rear of this manual to record your readings.

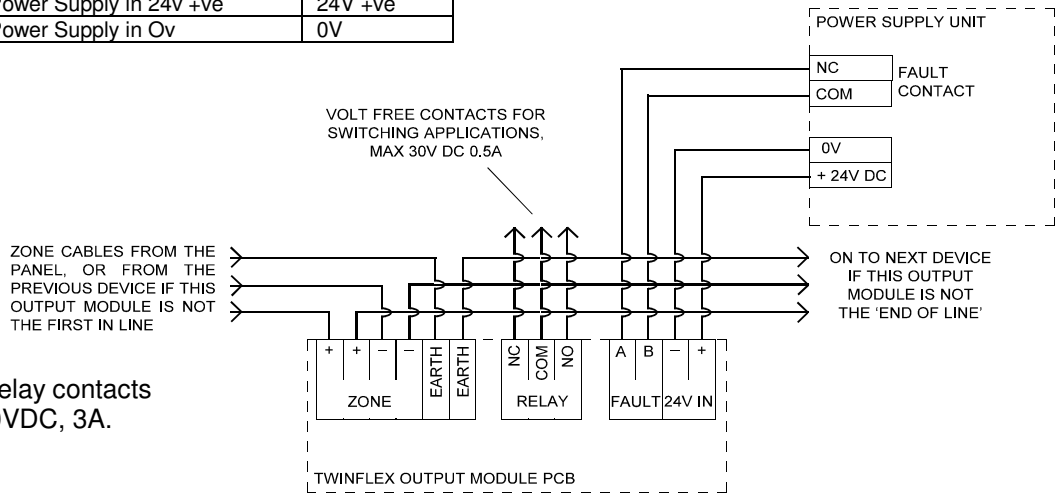
Installation 2nd Stage

Once all testing has been carried out on the cabling and 'continuity & integrity' has been proven, then the Output Module may be assembled. Set the on-board EOL dil switch as required before affixing the unit with the two screws provided.

Connections

No	Description	Label.
1	Zone +ve core	ZONE +ve
2	Zone +ve core	Zone +ve
3	Zone 0v core	Zone 0v
4	Zone 0v core	Zone 0v
5	Cable Screen	Earth
6	Cable Screen	Earth
7	Normally Closed relay contact	Relay NC
8	Common relay contact	Relay C
9	Normally Open relay contact	Relay NO
10	Fault input (S/C to B to clear)	Fault A
11	Fault input (S/C to A to clear)	Fault B
12	Power Supply in 24v +ve	24V +ve
13	Power Supply in Ov	0V




POWER SUPPLY UNIT
NC
COM
FAULT CONTACT
0V
+ 24V DC
VOLT FREE CONTACTS FOR SWITCHING APPLICATIONS, MAX 30V DC 0.5A
ZONE CABLES FROM THE PANEL, OR FROM THE PREVIOUS DEVICE IF THIS OUTPUT MODULE IS NOT THE FIRST IN LINE
ON TO NEXT DEVICE IF THIS OUTPUT MODULE IS NOT THE 'END OF LINE'
+ + – – EARTH EARTH
ZONE
NC COM NO
RELAY
A B – +
FAULT 24V IN
TWINFLEX OUTPUT MODULE PCB

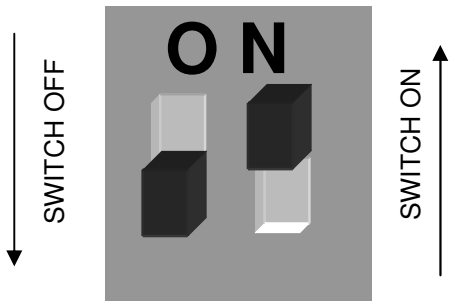
Note that the relay contacts are rated at 30VDC, 3A.

Power Up

The Output Module requires approximately one minute on power up to boot up its processor and settle down to normal operation. Do not test the module during this time.

DIL Switch Settings

ie, the switch above is set to EOL on,



The Output Module DIL switches may be used to program the operation of the on board EOL signal. They may be altered whilst the detector is still powered or the system may be powered down completely.

The last device on the circuit must have the EOL signal enabled (switch number 1 in the 'ON' position).

Do not use a resistor as an End of Line device.

		DIL SWITCH SETTINGS
		1
EOL Signal	Disabled (no end of line signal)	OFF
	Enabled	ON

LED Indication.

State	Fault LED	Active LED
fire	-	ON
fault	ON	-
normal	OFF	OFF

Testing

The Output Module should first be tested with an electronic test meter set to it's continuity setting to check that the relay contacts change state when the Control Panel is set into alarm.

Next prove the operation of the fault input using a wire link to clear the fault and removing the link to generate the fault.

Finally connect the output module to the equipment to which you wish to interface. The Twinflex control panel may then be set into the fire state to check that the interface has the desired effect on the equipment to which you have connected it. A fault should also be generated on this equipment to check that the Twinflex control panel acknowledges it correctly.

Loading.

Description	Quantity per zone	Loading (max 32 per zone)
Standard	32 max	1 SLU

Note that quantities of other device types need to be included as well, so see the relevant sections for each device for their loadings.

Twinflex Repeater Panel

Installation 1st Stage

This unit is classed as 'secondary indicating equipment' (as stipulated in the British Standards). It is available in 8 or 16 zone formats and has the optional functionality to provide system controls (silence, reset and evacuate). The main control panel controls and indication will not be affected or hidden.

Fix the back box in a suitable position using the three screw holes provided remembering to allow enough space for the correct termination of the appropriate cables.

The repeater panel requires a multi-core cable from the main control panel, and must consist of the following:

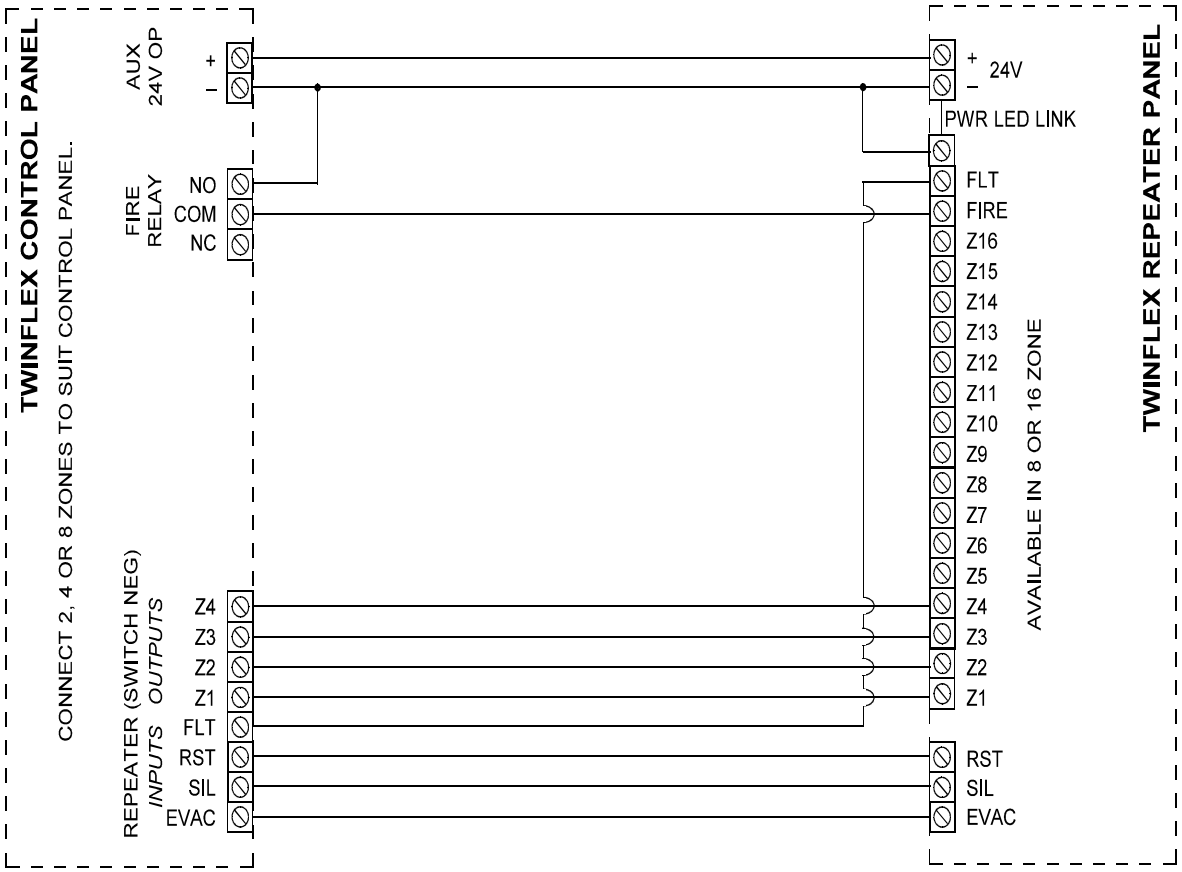
Number of Cores	Function	Example 8 zone repeater
2	24V DC power supply	2
5	Silence, reset, evacuate, fire and fault	5
1	Per zone indication required	8
	Example Total	**15**

Please remember that all high voltage testing must be carried out before the installation of any electronic devices as this may cause damage. The installer needs to provide proof of zone continuity readings etc., to enable commissioning to proceed.

Installation 2nd Stage

Once all testing has been carried out on the cabling and 'continuity & integrity' has been proven, then the repeater panel may be assembled.

Connections



Operation

In the event of a fire state being active on one of the main control panel zones, the common fire LEDs and the relevant zone led will light up, and the buzzer will sound.

Turning the key switch to the on position enables the controls buttons for ‘Silence Alarms’, ‘Reset System’ and ‘Sound Alarms’. If these controls are not required then do not connect the terminals labelled ‘EVAC’, ‘SIL’ and ‘RESET’.

Testing

Simply ensure that the relevant zone indications occur by activating each zone in turn at the main control panel and by creating a fault. The controls may be tested at the same time by silencing and resetting from the repeater panel.

General Operation

Introduction

This section describes the operation of the panel in response to fire and fault conditions, operator actions required to process alarms and restore the panel to the normal state, and engineering functions such as testing and system configuration.

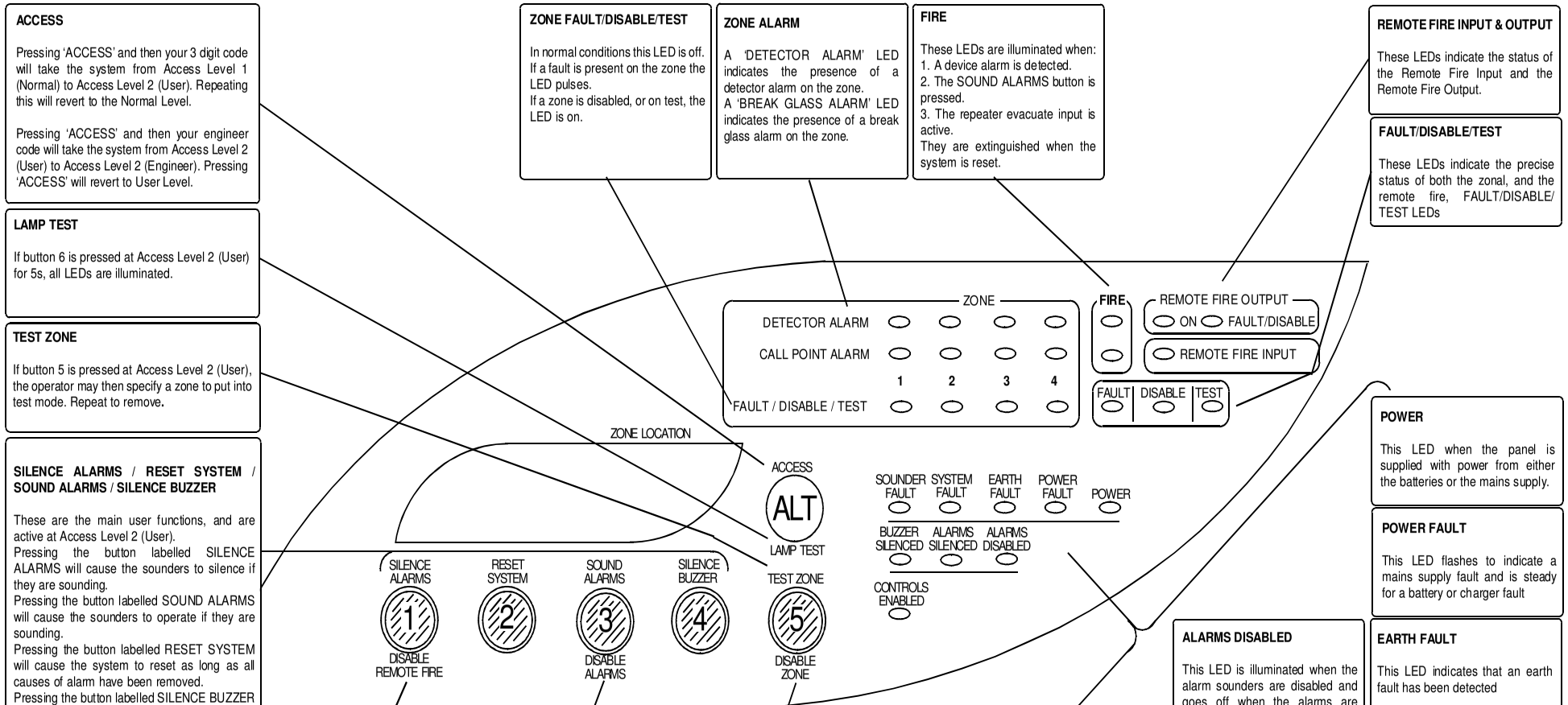
The panel controls and indicators are largely the same for the 2/4 and the 8 zone panels, but there are a few differences. Eg, the 8 zone panel uses a key switch for Access Level 2 (User) entry, whereas the 2/4 zone panels use a code entry.

Access Levels

The system access levels are set into three access levels as follows. For simple indication the status of the 'Controls Enabled' LED will show the level selected as follows;

Access Level	Description	Controls Enabled LED	2/4z Panel Codes	8z Panel Codes
1	Normal	OFF	-	-
2	User	ON	ACCESS 514	Key Switch
3	Engineer	FLASHING	ACCESS 5244	ACCESS 5244

Access Level 2 (User) Operation Instructions – 2/4 Zone Panel



ACCESS

Pressing 'ACCESS' and then your 3 digit code will take the system from Access Level 1 (Normal) to Access Level 2 (User). Repeating this will revert to the Normal Level.

Pressing 'ACCESS' and then your engineer code will take the system from Access Level 2 (User) to Access Level 2 (Engineer). Pressing 'ACCESS' will revert to User Level.

LAMP TEST

If button 6 is pressed at Access Level 2 (User) for 5s, all LEDs are illuminated.

TEST ZONE

If button 5 is pressed at Access Level 2 (User), the operator may then specify a zone to put into test mode. Repeat to remove.

SILENCE ALARMS / RESET SYSTEM / SOUND ALARMS / SILENCE BUZZER

These are the main user functions, and are active at Access Level 2 (User).
Pressing the button labelled SILENCE ALARMS will cause the sounders to silence if they are sounding.
Pressing the button labelled SOUND ALARMS will cause the sounders to operate if they are sounding.
Pressing the button labelled RESET SYSTEM will cause the system to reset as long as all causes of alarm have been removed.
Pressing the button labelled SILENCE BUZZER will cause the control panel buzzer to silence if it is sounding.

ZONE FAULT/DISABLE/TEST

In normal conditions this LED is off.
If a fault is present on the zone the LED pulses.
If a zone is disabled, or on test, the LED is on.

ZONE ALARM

A 'DETECTOR ALARM' LED indicates the presence of a detector alarm on the zone.
A 'BREAK GLASS ALARM' LED indicates the presence of a break glass alarm on the zone.

FIRE

These LEDs are illuminated when:
1. A device alarm is detected.
2. The SOUND ALARMS button is pressed.
3. The repeater evacuate input is active.
They are extinguished when the system is reset.

REMOTE FIRE INPUT & OUTPUT

These LEDs indicate the status of the Remote Fire Input and the Remote Fire Output.

FAULT/DISABLE/TEST

These LEDs indicate the precise status of both the zonal, and the remote fire, FAULT/DISABLE/ TEST LEDs

POWER

This LED when the panel is supplied with power from either the batteries or the mains supply.

POWER FAULT

This LED flashes to indicate a mains supply fault and is steady for a battery or charger fault

EARTH FAULT

This LED indicates that an earth fault has been detected

SYSTEM FAULT

This indicates a CPU reset or a processor error.

SOUNDER FAULT

This indicates a fault on the conventional sounder circuit

ALARMS DISABLED

This LED is illuminated when the alarm sounders are disabled and goes off when the alarms are enabled.

ALARMS SILENCED

This LED is illuminated when the alarm sounders are silenced and goes off when the system is reset.

BUZZER SILENCED

This indicates that the buzzer has been silenced. It will switch off if the buzzer restarts and when the panel is operating normally.

CONTROLS ENABLED

This LED illuminates to indicate that the controls are on, ie, at Access Level 2 (User). It flashes in the Access Level 3 (Engineer).

DISABLE REMOTE FIRE

If button 1 is pressed at Access Level 2 (User) whilst holding 'ALT' the 'Remote Fire Output' is disabled. Repeat to enable.

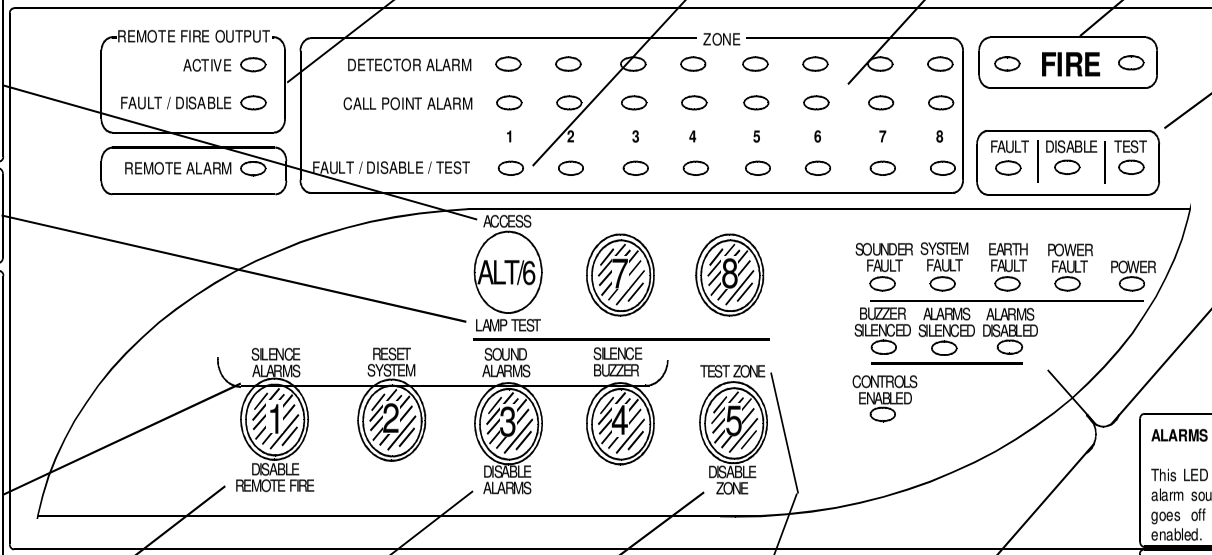
DISABLE ALARMS

If button 3 is pressed at Access Level 2 (User) whilst holding 'ALT' the alarm sounders are disabled. Repeat to enable.

DISABLE ZONE

If button 5 is pressed at Access Level 2 (User) whilst holding 'ALT', the operator may then specify a zone to be disabled. The detection is disabled but the sounders are still operational. Repeat to enable.

Access Level 2 (User) Operation Instructions – 2/4 Zone Panel



REMOTE FIRE INPUT & OUTPUT

These LEDs indicate the status of the Remote Fire Input and the Remote Fire Output.

ZONE FAULT/DISABLE/TEST

In normal conditions this LED is off.
If a fault is present on the zone the LED pulses.
If a zone is disabled, or on test, the LED is on.

ZONE ALARM

A 'DETECTOR ALARM' LED indicates the presence of a detector alarm on the zone.
A 'BREAK GLASS ALARM' LED indicates the presence of a break glass alarm on the zone.

FIRE

These LEDs are illuminated when:
1. A device alarm is detected.
2. The SOUND ALARMS button is pressed.
3. The repeater evacuate input is active.
They are extinguished when the system is reset.

FAULT/DISABLE/TEST

These LEDs indicate the precise status of both the zonal, and the remote fire, FAULT/DISABLE/TEST LEDs

ACCESS

Pressing 'ACCESS' and then your 3 digit code will take the system from Access Level 1 (Normal) to Access Level 2 (User). Repeating this will revert to the Normal Level.

Pressing 'ACCESS' and then your engineer code will take the system from Access Level 2 (User) to Access Level 2 (Engineer). Pressing 'ACCESS' will revert to User Level.

LAMP TEST

If button 6 is pressed at Access Level 2 (User) for 5s, all LEDs are illuminated.

SILENCE ALARMS / RESET SYSTEM / SOUND ALARMS / SILENCE BUZZER

These are the main user functions, and are active at Access Level 2 (User).
Pressing the button labelled SILENCE ALARMS will cause the sounders to silence if they are sounding.
Pressing the button labelled SOUND ALARMS will cause the sounders to operate if they are sounding.
Pressing the button labelled RESET SYSTEM will cause the system to reset as long as all causes of alarm have been removed.
Pressing the button labelled SILENCE BUZZER will cause the control panel buzzer to silence if it is sounding.

POWER

This LED when the panel is supplied with power from either the batteries or the mains supply.

POWER FAULT

This LED flashes to indicate a mains supply fault and is steady for a battery or charger fault

EARTH FAULT

This LED indicates that an earth fault has been detected

SYSTEM FAULT

This indicates a CPU reset or a processor error.

SOUNDER FAULT

This indicates a fault on the conventional sounder circuit

ALARMS DISABLED

This LED is illuminated when the alarm sounders are disabled and goes off when the alarms are enabled.

ALARMS SILENCED

This LED is illuminated when the alarm sounders are silenced and goes off when the system is reset.

BUZZER SILENCED

This indicates that the buzzer has been silenced. It will switch off if the buzzer restarts and when the panel is operating normally.

CONTROLS ENABLED

This LED illuminates to indicate that the controls are on, ie, at Access Level 2 (User). It flashes in the Access Level 3 (Engineer).

DISABLE REMOTE FIRE

If button 1 is pressed at Access Level 2 (User) whilst holding 'ALT' the 'Remote Fire Output' is disabled. Repeat to enable.

DISABLE ALARMS

If button 3 is pressed at Access Level 2 (User) whilst holding 'ALT' the alarm sounders are disabled. Repeat to enable.

DISABLE ZONE

If button 5 is pressed at Access Level 2 (User) whilst holding 'ALT', the operator may then specify a zone to be disabled. The detection is disabled but the sounders are still operational. Repeat to enable.

TEST ZONE

If button 5 is pressed at Access Level 2 (User), the operator may then specify a zone to put into test mode. Repeat to remove.

LED Indication

The operation of the LED indication on the front of the control panel is described below.

	Description	Colour	State	Reason
1.	**'FIRE'**	Red	Continuous	The control panel is in the fire state. Other indicators will show the origin
2.	**'DETECTOR ALARM'**	Red	Flashing	A smoke or heat detector is in the alarm state and sending an alarm signal to the panel. The Multipoint LED will be on continuously.
3.	**'CALL POINT ALARM'**	Red	Continuous	A manual call point is in the alarm state and sending an alarm signal to the panel. The manual call point LED will be flashing.
4.	**'FAULT'**	Amber	Continuous	This indicates the status of the multifunction FAULT/DISABLE/TEST LED.
5.	**'DISABLE'**	Amber	Continuous	This indicates the status of the multifunction FAULT/DISABLE/TEST LED.
6.	**'TEST'**	Amber	Continuous	This indicates the status of the multifunction FAULT/DISABLE/TEST LED.
7.	**'FAULT/DISABLE/TEST'** and **'FAULT'**	Amber	Flashing at same time as buzzer. Flashing twice in between buzzer pulses.	No 'End of Line' signal is being received, eg: EOL not switched on An open or short circuit exists on the wiring. A device is signalling a fault condition, or more than one device is set to 'End of Line', eg: Optical Chamber removed. Optical Chamber contaminated or dusty. Output Module fault loop open circuit. Output Module has no 24V DC supply.
8.	**'FAULT/DISABLE/TEST'** and **'DISABLE'**	Amber	Continuous	The zone has been disabled at Access Level 2 (User).
9.	**'FAULT/DISABLE/TEST'** and **'TEST'**	Amber	Continuous	The zone is in test mode.
10.	**REMOTE FIRE OUTPUT 'ON'**	Red	Continuous	The Remote Fire Output (monitored relay circuit) has been activated by the control panel.
11.	**REMOTE FIRE OUTPUT 'FAULT/DISABLE'** and **'FAULT'**	Amber	Flashing	The Remote Fire Output (monitored relay circuit) has detected a fault condition, eg: An open or short circuit exists on the wiring. The 4K7 EOL resistor is not fitted. A device fitted is not dioded for polarisation and suppression
12.	**REMOTE FIRE OUTPUT 'FAULT/DISABLE'** and **'DISABLE'**	Amber	Continuous	The Remote Fire Output (monitored relay circuit) is disabled.
13.	**'REMOTE FIRE INPUT'**	Red	Continuous	The Remote Fire Input is in the fire state.

14.	**'SOUNDER FAULT'**	Amber	Continuous	The Remote Fire Output (monitored relay circuit) has detected a fault condition, eg: An open or short circuit exists on the wiring. The 4K7 EOL resistor is not fitted. A device fitted is not dioded for polarisation and Suppression This only relates to the conventional sounder circuit, not the 2-wire zones.
15.	**'SYSTEM FAULT'**	Amber	Continuous	The system Fault LED indicates that the processor has rebooted. It may be cleared with a silence and reset from Access Level 2 (User) Or, A checksum error has been detected. Reprogram all setting to clear.
16.	**'EARTH FAULT'**	Amber	Continuous	An earth fault has been detected where a path exists from the circuit wiring to earth. Remove circuits one at a time to discover which one, and then rectify.
17.	**'POWER FAULT'**	Amber	Continuous	A battery supply or charger fault has been detected. Check the fuse and the battery voltages.
			Flashing	A mains supply fault has been detected. Check for a 24V AC supply on the PCB Ac terminals.
18.	**'POWER'**	Green	Continuous	This indicates that power is being supplied to the control panel from either the 230V AC mains supply, or the standby batteries.
19.	**'BUZZER SILENCED'**	Amber	Continuous	The buzzer has been silenced. The indication will finish when the underlying condition is removed.
20.	**'ALARMS SILENCED'**	Amber	Continuous	The alarm sounders have been silenced, but the control panel has not yet been reset.
21.	**'ALARMS DISABLED'**	Amber	Continuous	The alarm sounders have been disabled to prevent their operation.
22.	**'CONTROLS ENABLED'**	Amber	Off	The control panel is at Access Level 1 (Normal). It is active and the user controls are disabled.
			Flashing	The control panel is at Access Level 2 (User). It is active and the user controls are enabled.
			Continuous	The control panel is at Access Level 3 (Engineer). It is active and thee user controls are replaced with the engineer controls.

Access Level 1 (Normal)

In the 'Normal' state the panel is active in detecting fire and fault conditions and will sound the alarm sounders when it is triggered. The 'User Controls' are disabled and a code entry is required for any operation of the system other than the 'LAMP TEST'

The only indication at this point should be the green 'POWER' light, unless any fire or fault conditions are detected.

To Enter Access Level 2 'User' mode (2 or 4 zone panels)

1. Press '**ACCESS**' and then **514**	The buzzer will be heard on each key press, and when successfully entered the 'CONTROLS ENABLED' light will light up continuously. If an incorrect code is entered, simply start the above sequence again.

To Enter Access Level 2 'User' mode (8 zone panels)

1. Insert the **key** and turn clockwise	The 'CONTROLS ENABLED' light will light up continuously.

Access Level 2 (User)

In the 'User' state the panel is still active in detecting fire and fault conditions and will sound the alarm sounders when it is triggered. The 'User Controls' are enabled and operate as described below.

At this point the control panel indication should include a steady green 'POWER' light and a steady yellow 'Controls Enabled' light, unless any fire or fault conditions are detected.

The control panel will time out of this mode in approximately 5 minutes from the last key press, returning to Access Level 1 (Normal).

To Exit Access Level 2 'User' mode (2 or 4 zone panels)

1. Press '**ACCESS**' and then **514**	A continuous buzzer tone will start when 'ACCESS' is pressed, and will continue until the code is finished. When complete the 'CONTROLS ENABLED' light will turn off. If an incorrect code is entered, press the 'ACCESS' button before starting the above sequence again

To Exit Access Level 2 'User' mode (8 zone panels)

1. Turn the **key** anti clockwise and remove it.	The 'CONTROLS ENABLED' light will turn off.

Silence the Alarms (all panels)

1. Press '**SILENCE ALARMS**' (button 1)	The alarm sounders should silence, the buzzer and the fire indication lights should remain and the 'ALARMS SILENCED' light should come on.

Reset the System (all panels)

1. Press '**RESET SYSTEM**' (button 2)	The buzzer and the fire indication lights should switch off. However, if any Manual Call Points are still activated or any detector are still in alarm due to continued presence of smoke or heat, then the system will re-activate into the fire condition again. These will need to be cleared before the system may be reset.

Sound the Alarms (all panels)

1. Press '**SOUND ALARMS**' (button 3)	The alarm sounders will activate. The buzzer and the fire indication lights will also switch on

Silence Buzzer (all panels)

1. Press '**SILENCE BUZZER**' (button 4)	The fault buzzer will be silenced and the 'Buzzer Silenced LED will light. The 'Buzzer Silenced' LED will extinguish when the faults are cleared, and the buzzer will start again only if another fault condition occurs.

Test Mode (all panels)

The 'Test Zone' function allows the selection of a single detection zone to operate in a 'one-man walk test mode'. On triggering a device the device LED and the sounders operate, and control panel enters the fire state as normal. After approximately 5 seconds the system will reset, and another may be tested.

1. Press '**TEST ZONE**' (button 5)	A continuous buzzer tone will start
2. Press the button corresponding to the zone to be selected, ie, **3** for zone 3	The continuous buzzer tone will change to an intermittent tone if a zone has been selected for test, or it will stop if the zone has been de-selected from test. The 'Test' LED and the relevant zone 'Test' LED will light during test Repeating the above sequence will reverse the previous option, i.e., 'on test' to 'off test'.

Disable Remote Fire (all panels)

The 'DISABLE REMOTE FIRE' function allows the isolation of the remote fire output. The control panel will then not activate the remote fire output when the control panel enters the alarm state.

1. Press and hold the button marked '**ACCESS**'	A continuous buzzer tone will start
2. Press the button marked '**DISABLE REMOTE FIRE**' and then release them both.	The continuous buzzer tone will change to an intermittent tone if the Remote Fire Output has been disabled and will stop if the Remote Fire Output has been enabled. The remote fire output 'FAULT' light and the common 'DISABLE' light will also switch on during disablement. Repeating the above sequence will reverse the previous option, i.e., disabled to enabled.

Disable Alarms (all panels)

The 'DISABLE ALARMS' function allows the isolation of all of the alarm sounders. The control panel will then not activate the alarm sounders when the control panel enters the alarm state.

1. Press and hold the button marked '**ACCESS**'	A continuous buzzer tone will start
2. Press the button marked '**DISABLE ALARMS'** and then release them both.	The continuous buzzer tone will change to an intermittent tone if the alarms have been disabled and will stop if the alarms have been enabled. The 'Alarms Disabled' light and the common 'DISABLE' light will also switch on during disablement. Repeating the above sequence will reverse the previous option, i.e., disabled to enabled.

Disable Zone (all panels)

The 'DISABLE ZONES' function allows the isolation of a detection zone. The control panel will then ignore all alarm signals from that zone, but the alarm sounders will still activate in alarm.

1. Press and hold the button marked '**ACCESS**'	A continuous buzzer tone will start
2. Press the button marked '**DISABLE ZONES'** and then release them both.	The continuous buzzer tone will continue

3. Press the button corresponding to the zone to be selected, ie, **3** for zone 3	The continuous buzzer tone will change to an intermittent tone if a zone has been disabled and will stop if the zone has been enabled. The zone 'Disabled' light and the common 'DISABLE' light will also switch on during disablement. Repeating the above sequence will reverse the previous option, i.e., disabled to enabled.

Lamp Test (all panels).

1. Press and hold the button marked '**LAMP TEST**'	The buzzer will sound immediately and after 5 seconds all the indication lights will be switched on. Release the 'LAMP TEST' and both the indication lights and the buzzer will stop.

To Enter Access Level 3 'Engineer' mode (all panels) *Ensure control panel is in Access Level 2 (user)*

1. Press '**ACCESS**' and then **5244**	The buzzer will be heard continually until the code is successfully entered, the 'CONTROLS ENABLED' light will flash. If an incorrect code is entered, simply start the above sequence again.

Access Level 3 (Engineer)

In the 'Engineer' state the panel is still active in detecting fire and fault conditions and will sound the alarm sounders when it is triggered. The 'User Controls' however, are disabled and the controls described below replace the functions marked on the control panel overlay.

At this point the control panel indication should include a steady green 'POWER' light and a flashing yellow 'Controls Enabled' light, unless any fire or fault conditions are detected.

To Exit 'Engineer' mode (all panels)

1. Press '**ACCESS**'	The 'CONTROLS ENABLED' light will change from the flashing state to a steady state. The intermittent buzzer tone will stop.

To Configure the Number of Active Zones (all panels)

The Twinflex system differs from a standard conventional system by utilising a simple data communication rather than monitoring of resistance or voltage. Thus, unused zones on the Twinflex system must be turned off as follows.

Do not use a resistor as an End of Line device on a Twinflex zone.

The factory default will have all zone active and active zones will always start from 1, ie, zones 1,2,3,4 and 5 active if 5 are selected.

1. Press '**1**'	A continuous buzzer tone will start. A number of the 'ZONE/FAULT' lights will switch on, corresponding to the current number of zones that are active, ie lights 1,2&3 mean that 3 zones are switched on
2. Press the button corresponding to the number of active zones to be selected, ie, **3** for zones 1, 2 & 3.	The continuous buzzer tone will stop and the lights mentioned above will turn off. Your new setting is now active.
Or,	
If the setting displayed is already as you require then press nothing until the system times out (~15 seconds).	The continuous buzzer tone will stop and the lights mentioned above will turn off. The original setting is still active.

To Select the Alarm Sounder Configuration (all panels)

The system will respond to an alarm in one of two ways as follows;

Mode	Type	Description
1	Common Alarm	All sounders activated in any alarm condition - Factory Default
2	Two Stage Alarm	Sounders in the zone of alarm origin will sound continuously, all other zones will pulse intermittently.

1. Press '**3**'	A continuous buzzer tone will start. A number of the 'ZONE/FAULT' lights will switch on, corresponding to the current mode (shown above), ie lights 1&2 mean that mode 2 is selected.
2. Press the button corresponding to the mode required.	The continuous buzzer tone will stop and the lights mentioned above will turn off. Your new setting is now active.
Or,	
Press nothing until the system times out.	The continuous buzzer tone will stop and the lights mentioned above will turn off. The original setting is still active.

To Select the Alarm Input Configuration (all panels)

The system will respond to an input to the 'ALARM INPUT' in one of four ways as follows; All these input modes are non-latching, ie, remove the cause of the trigger to the 'ALARM INPUT' and the operation described below will cease.

Mode	Type	Indication	Activations	Time
1	Class Change – 10s - Factory Default	None	Sounders	10 seconds non-latching
2	Remote Alarm – no Remote Fire Output	Fire, Remote Fire Input	Sounders, all relays except Remote Fire Output	Non-latching
3	Class Change	None	Sounders	Non-latching
4	Remote Alarm	Fire, Remote Fire Input	Sounders, all relays	Non-latching

1.	Press '**5**'	A continuous buzzer tone will start. A number of the 'ZONE/FAULT' lights will switch on, corresponding to the current mode (shown above), ie lights 1&2 mean that mode 2 is selected.
2.	Press the button corresponding to the mode required. Or, Press nothing until the system times out.	The continuous buzzer tone will stop and the lights mentioned above will turn off. Your new setting is now active. The continuous buzzer tone will stop and the lights mentioned above will turn off. The original setting is still active.

Disable Zone (all panels)

The 'DISABLE ZONES' function allows the isolation of a detection zone. If this is carried out at Access Level 3 (Engineer) the control panel will then ignore all alarm signals from that zone, AND the alarm sounders will NOT activate in alarm (unlike disabling a zone at Access Level 2).

1.	Press and hold the button marked '**ACCESS**'	A continuous buzzer tone will start
2.	Press the button marked '**DISABLE ZONES**' and then release them both.	The continuous buzzer tone will continue
3.	Press the button corresponding to the zone to be selected, ie, **3** for zone 3	The continuous buzzer tone will change to an intermittent tone if a zone has been disabled and will stop if the zone has been enabled. The zone 'Disabled' light and the common 'DISABLE' light will also switch on during disablement. Repeating the above sequence will reverse the previous option, i.e., disabled to enabled.

Programming Summary

Description	Action	Notes	Relevant Panels			
			2/4 zone	8 zone	Standard	Plus
Access Level 2 – 'User' (These functions are described on the control panel overlay adjacent to the relevant button)						
Enter 'AL2' (User) from 'AL1' (Normal)	**'Access' '514.**	Controls Enabled Light will come on continuously.	✔		✔	✔
Enter 'AL2' (User) from 'AL1' (Normal)	Turn **key on**.	Controls Enabled Light will come on continuously.		✔	✔	✔
Exit 'AL2' (User) to 'AL1' (Normal)	**'Access' '514'.**	Controls Enabled Light will go off.	✔		✔	✔
Exit 'AL2' (User) to 'AL1' (Normal)	Turn **key off**	Controls Enabled Light will go off.		✔	✔	✔
Silence the alarm sounders	***'Silence'***	The alarm sounders will silence.	✔	✔	✔	✔
Reset the control panel to clear activations	***'Reset'***	The control panel will reset if all devices are free of alarm.	✔	✔	✔	✔
Silence the fault buzzer until a further fault occurs	***'Silence Buzzer'***	The buzzer will silence and the 'Buzzer Silenced' light will come on.	✔	✔	✔	✔
Set or remove a zone from 'Test Mode'	**'Test Zone'** followed by the number of the required zone, ie, **'3'**.	The zone 'Fault/disable/test' light and the general 'Test' light will come on or go off accordingly.	✔	✔	✔	✔
Disable or enable the Remote Fire Output	**'Access'** & **'Disable Remote Fire'**	The 'Remote Fire' 'Fault/Disable' light will come on or go off accordingly.	✔	✔	✔	✔
Disable or enable the alarm sounders	**'Access'** & **'Disable Alarms'**	The 'Alarms Disabled' light will come on or go off accordingly.	✔	✔	✔	✔
Disable or enable a Zone	**'Access'** & **'Disable Zone',** followed by the zone number required, ie **'3'**	The 'Disabled' light and the relevant 'Fault/disable/test' light will come on or go off accordingly.	✔	✔	✔	✔
Lamp Test	**'Lamp Test',** and hold for 5 seconds	All the lights will come on until the 'Lamp Test' button is released	✔	✔	✔	✔
Access Level 3 - 'Engineer' (The functions override those described on the control panel overlay)						
Enter 'AL3' (Engineer) from 'A2' (User)	**'Access' 5244**	Controls Enabled Light will flash and buzzer will pulse.	✔	✔	✔	✔
Exit 'AL3' (Engineer) to 'AL2' (User)	'**Access**'	Controls Enabled Light will come on continuously.	✔	✔	✔	✔
Program the number of active zones	**'1'** followed by the number of zones required, ie **'3**' for zones 1, 2 & 3 active.	The zone lights will show the existing setting before the zone selection is made. The panel will turn off the unused zones	✔	✔	✔	✔
Alarm Configuration	**'3'** followed by; **'1' -** common alarm or, **'2'** - 2 stage alarm	The zone lights will show the existing setting before the selection is made;	✔	✔	✔	✔
Alarm Input Configuration	**'5'** followed by; **'1' -** timed class change, **'2' -** remote fire, no output **'3' -** class change **'4' -** remote fire	The zone lights will show the existing setting before the selection is made;	✔	✔	✔	✔
Zone Mode	**'Access'** & **'1',** followed by the zone number requiring a change of state, ie **'3'**	The zone lights will show the existing setting before the zone selection is made; Zone light on – Dwelling Zone Zone light off – Communal Zone	✔	✔		✔
Repeater Configuration	**'Access'** & **'2',** followed by; **'1' –** Fire alarm outputs, **'2' –** Confirmation outputs	The zone lights will show the existing setting before the zone selection is made;	✔	✔		✔
Confirmation Time	**'Access'** & **'3',** followed by 1-5 minutes, ie **'2'**	The zone lights will show the existing setting before the zone selection is made;	✔	✔		✔
Disable or enable a Zone	**'Access'** & **'5',** followed by the zone number required, ie **'3'**	The 'Disabled' light and the relevant 'Fault/disable/test' light will come on or go off accordingly.	✔	✔	✔	✔

Checkpoint Plus

Introduction

The instructions in this section apply only to the Checkpoint Plus versions of the Twinflex control panels and are supplementary to the rest of this manual.

The Checkpoint Plus technology has been designed primarily to address the problem of unwanted alarms in apartment blocks or 'Houses of Multiple Occupancy' (HMO).

The Checkpoint Plus facility enables certain detector alarms to be checked, or confirmed, before the entire system is activated. Further more, a local (at that detector) or zonal 'Alarm Confirmation Warning' sound is given, allowing any persons nearby to check the area for a possible fire. If the cause of the alarm is removed (i.e., burnt toast or a dust cloud) then the 'Alarm Confirmation Warning' will cease and the system returns to normal. If the cause of the alram is still present at the end of the confirmation time then the entire system enters a full alarm state.

System planning prior to installation is essential, as certain zones need to be cabled separately, in order that they may be configured for 'Dwelling' (delayed) or 'Communal' (instant). I.e., The stairwell and communal corridors in a block of apartments will need to be wired on separate zones to the apartments.

If there is any doubt please refer to your supplier.

Zone Modes

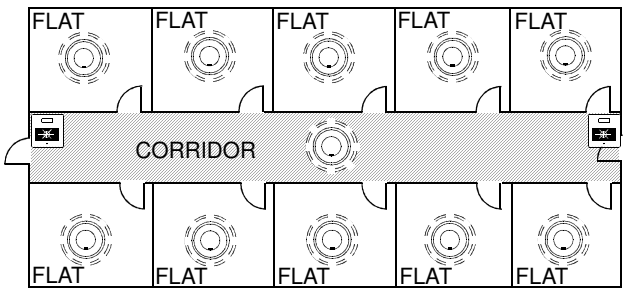
Each zone on the system can be separately configured as an 'Instant' (normal) zone, or as a 'Delayed' zone. 'Instant' zones should be used for communal areas in apartment blocks and for escape routes such as stairwells, where normal fire alarm operation is detected. 'Delayed' zones introduce an 'Alarm Confirmation Delay' to a smoke or heat detector alarm on a zone, for use within apartments and other areas where unwanted alarms are likely to be a problem. Manual Call Points always give instant operation, whichever type of zone they may be a part of.

Instant Zones - Normal Operation in Communal Areas

Communal zones are those covering general access areas such as entrance hallways, corridors, stairwells etc., including any area which is an escape route for a private or dwelling area.

The activation of any Manual Call Point or detector in these areas generates an immediate alarm and operates the sounders in all areas.

The drawing below shows a typical arrangement with the communal areas highlighted. This area should be cabled on it's own zone and set as an 'Instant Zone'.



Delayed Zones – 'Confirmation Delay' for Dwelling Areas

Dwelling zones are those covering apartments or private living areas. The activation of any smoke or heat detector in these areas generates an 'Alarm Confirmation Warning' in that area but no indication shows on the control panel. At the end of the 'Alarm Confirmation' time the system will check the detector again to see if the activation has cleared. If so then the sounders will silence and no further action need be taken.

If, however, the detector is still activated then the entire system will go into alarm, operating all the sounders on the system.

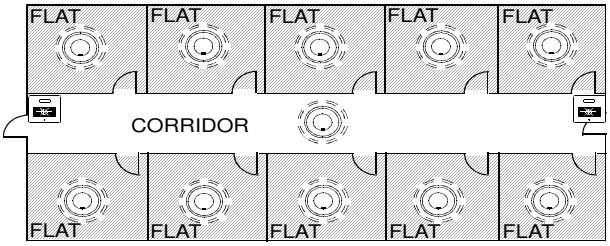
The previous drawing shows a typical arrangement with the dwelling areas shown as Bed-Sits. This area should be set as a 'Delayed Zone'.

The activation of any Manual Call Point in a delayed (communal) zone generates an immediate alarm and operates the sounders in all areas.

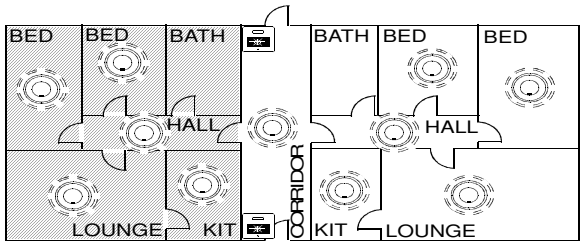
Delayed Zones – Local or Zonal Alarm Confirmation

Whilst a detector is in the 'Confirmation State' it may be configured to give an alarm confirmation warning at just that detector / sounder (Local Alarm Confirmation), or across that entire zone (Zonal Alarm Confirmation). This continues until the situation is confirmed or reset.

The drawing below shows a number of small apartments on one zone with just one Multipoint detector with sounder in each apartment. The Alarm Confirmation should be set to operate in a local manner, so that in the event of an unwanted alarm, only the one apartment is alerted.



The Drawing below shows a larger apartment with several Multipoint detectors. The apartment should be cabled on its own zone and the Alarm Confirmation Alarm should be set to operate in a Zonal manner, so that all persons within the apartment are alerted.



The detector DIL switch number 2 may be used to enable the 'Logical Link' which links the operation of the sounder to that individual detector whilst in confirmation warning stage. If this is set to the off position the Alarm Confirmation Warning will sound in the entire zone.

		DIL SWITCH SETTINGS							
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Logical Link *	Logical link disabled (Zonal Confirmation)		0						
	Logical link enabled (Local Confirmation)		1						

Alarm Confirmation Delay Time

When a detector on a dwelling zone is activated, the integral sounder (or all the sounders on the same zone if the systems is configured to do so) will operate for a pre-determined time period. During this period the control panel carries out a number of alarm confirmation checks, following which it either silences the sounders if the detector is no longer in the fire state, or generates a full alarm if the detector is still active.

The number of checks carried out by the panel can be in the range of 1 to 5, with each check period having a duration of approximately one minute. Therefore the maximum checking period is in the order of 5 minutes during which the local sounder (or all the sounders on the same zone if the systems is configured to do so) is energised.

If a zone fault is detected during the alarm confirmation time, a full alarm will result.

No alarm is shown at the control panel during the alarm confirmation time, but if indication is required then the control panel repeater outputs may be configured to become active during this alarm confirmation time rather than in the normal fire state.

It is not possible to silence the Alarm Confirmation warning sounder during the Alarm Confirmation period of a delayed zone. In order to silence this warning sounder it is necessary to sound the alarm first with the 'SOUND ALARMS' button, and then to silence and reset as during normal operation.

Check Point Plus Set-up at Access Level 3 (Engineer)

In the 'Engineer' state the panel is still active in detecting fire and fault conditions and will sound the alarm

To Configure the Zone Mode

The 'ZONE MODE' function allows the setup of a zone into 'Local' or 'Zonal' alarm confirmation mode as follows:

Type	Description	Zone Fault LED
Instant (normal)	All sounders activated in any alarm condition - Factory Default	OFF
Delayed (alarm confirmation)	Multipoint detector will start the alarm confirmation time when in alarm, with either local or zonal warning sound depending on the setting of the logical Link (Switch 2) on that device.	ON

1.	Press and hold the button marked '**ACCESS**'	A continuous buzzer tone will start
2.	Press the button marked '**1**' and then release them both.	The continuous buzzer tone will continue. The 'ZONE FAULT' lights will switch on, corresponding to the mode of that zone, ie lights 1&3 on means that zones 2&4 are 'Instant (normal)' and zones 1&3 are 'Delayed (alarm confirmation)'.
3.	Press the button corresponding to a zone of which you wish to change mode, ie, **3** if you wish to change the state of zone 3.	The continuous buzzer tone will change to an intermittent tone, and the lights mentioned above will turn off. Your new setting is now active.
4.	Repeat the above sequence until the 'ZONE FAULT' LEDs (at point 2 above) show the correct settings for your requirements, then; Press nothing until the system times out.	The 'ZONE FAULT' lights will switch on, corresponding to the mode of that zone, ie lights 1&3 on means that zones 2&4 are 'Instant (normal)' and zones 1&3 are 'Delayed (alarm confirmation)'. The continuous buzzer tone will change to an intermittent tone, and the lights mentioned above will turn off. The original setting is still active.

To Configure the Alarm Confirmation Delay Time

The Alarm Confirmation delay time may be set as follows.

The factory default will show a 1 minute Alarm Confirmation delay.

1.	Press and hold the button marked '**ACCESS**'	A continuous buzzer tone will start
2.	Press the button marked '**3**' and then release them both.	The continuous buzzer tone will continue. A number of the 'ZONE/FAULT' lights will switch on, corresponding to the current Alarm Confirmation delay time, ie lights 1,2&3 mean that an alarm confirmation delay of 3 minutes is selected.
3.	Press the button corresponding to the Alarm Confirmation delay to be selected, ie, **3** for an Alarm Confirmation delay of 3 minutes.	The continuous buzzer tone will change to an intermittent tone, and the lights mentioned above will turn off. Your new setting is now active.
	Or,	
	If the setting displayed is already as you require then press nothing until the system times out.	The continuous buzzer tone will change to an intermittent tone, and the lights mentioned above will turn off. The original setting is still active.

To Configure the Operation of the Repeater Outputs

The repeater outputs may be configured as follows.

Mode	Type	Description
1	Fire Repeat	Repeater outputs active in the fire state only - Factory Default
2	Confirmation Repeat	Repeater outputs active in the alarm confirmation state only

1.	Press and hold the button marked '**ACCESS**'	A continuous buzzer tone will start
2.	Press the button marked '**2**' and then release them both.	The continuous buzzer tone will continue. A number of the 'ZONE/FAULT' lights will switch on, corresponding to the current repeater output configuration, ie lights 1&2 mean that mode 1 (Fire repeat) is selected.
3.	Press the button corresponding to the repeater mode required, ie, **2** for mode 2 (Alarm Confirmation repeat).	The continuous buzzer tone will change to an intermittent tone, and the lights mentioned above will turn off. Your new setting is now active.
	Or,	
	If the setting displayed is already as you require then press nothing until the system times out.	The continuous buzzer tone will change to an intermittent tone, and the lights mentioned above will turn off. The original setting is still active.

See the Programming summary shown previously for more concise instructions.

Installation and Commissioning

Installation 1st Stage

The installer needs to install the system wiring in the form of a 2-core radial circuits. The cabling should be 2 core 1.5mm^2, screened and fire resistant, of an MICC or FP200 equivalent type. We recommend against the use of a 4 core cable as a zone feed and return, due to the possibility of data corruption.

The zone should be left with no devices connected, and must be tested for continuity and integrity with a high voltage tester, as required for general electrical installations.

The control panel back box should be mounted, with the mains supply tested, connected and isolated at the un-switched fused spur, ready for the commissioning.

The installer needs to provide a set of 'As-Wired' drawings and proof of loop continuity and insulation test readings etc., before commissioning may proceed. This information is essential, and may be entered onto the forms provided at the rear of the manual.

Installation 2nd Stage

Once the commissioning engineer is satisfied with the continuity / integrity of the loop, the control panel may be powered up as follow.

1. Ensure that none of the field wiring is connected. This is not essential but it helps to build up the system in sections when commissioning a system for the first time.
2. Apply the 230V AC mains supply, before connecting the batteries.
3. The control panel takes approximately half a minute to boot up its processor. When this is complete the empty zones should all indicate a fault. This is correct.
4. Program the number of active zone required, and any other settings needed.
5. Add the last device on to each zone, ensuring that its EOL signal is switched on. Connect the zones into the control panel and ensure that the fault lights clear as each zone is connected.
6. Add the additional devices in one at a time, allowing each one to clear from fault (approximately half a minute).
7. Connect all other circuits and ensure that they are fault free.

There is no need directly to build the system up in sections in this manner, but we recommend this method as good engineering practice to provide a controlled process of building up the system in blocks.

Commissioning

Commissioning the Twinflex system involves programming and testing the system for correct operation.

It is essential that every device is tested in every mode of operation, and that all programmed actions are observed for correct operation. This includes the smoke testing of smoke detectors, heat testing of heat detectors, testing of Manual Call Points, testing of all inputs, testing of all sounders and outputs, and fault testing of detectors by head removal.

We also recommend that all devices, which are set to 'heat only', are tested for smoke operation, to ensure that the smoke detection has been correctly disabled.

Due to the complexity and inherent importance of a life protection type system, training on this equipment is essential, and commissioning should only be carried out by competent persons.

End User Training.

A Fire Alarm System is of little use if the end user and/or the responsible persons who will be present in the building do not know how to operate and respond to the system. It is therefore essential that commissioning includes training for the users of the system and responsible persons.

User instructions and a Zone Chart should be left adjacent to the control panel. As access to the system must be controlled by responsible persons, it would be unusual to display the access codes on this notice. These codes must however be available for the responsible persons, so ensure that they know and record them in a secure place.

The Twinflex User Guide should be explained and left with the responsible person on site, for storage in an accessible and known location, in order that the responsible person and the service engineer may keep information records up to date.

A single page user instruction sheet is included at the end of this manual. A copy of this should be mounted adjacent to the control panel.

Fault Finding

Summary of Faults

Intermittent Zone Fault

1. Tighten the unused 'zone screw terminals' at the EOL device
2. Too many Hatari sounders on a zone. Remove some or adjust sound levels down.
3. EOL resistor has been fitted. Remove and use the correct dil switch on the device.
4. Interference from old or flickering fluorescent lights, low voltage transformers, or general (less common). Ensure cable is screened and install a Ferrite core on the zone cables. Ensure detector is away from light.
5. Dirty, or contaminated optical chambers (MK3). Replace with a new optical chamber.
6. Weak EOL signal. Replace the EOL device.
7. Faulty auto-calibration of EOL signal. Replace the EOL device.
8. More than one EOL switched on (panel LED flashing faster than buzzer). Remove the EOL device to see if the system enter fault as normal. If the system stays clear then another device is set to EOL and this must be found and switched off.
9. Earth fault. Ensure that all system earths are intact and not shorting to any other cables.

Permanent Zone Faults

1. More than one EOL switched on (panel LED flashing faster than buzzer). Remove the EOL device to see if the system enter fault as normal. If the system stays clear then another device is set to EOL and this must be found and switched off.
2. No EOL signal detected by panel (LED flashing at the same rate as buzzer). Switch the EOL on at the last device.
3. O/C or S/C on zone cables. Remove the zone cable from the control panel and check with an electrical test meter (not a high voltage insulation test).
4. Tighten the unused 'zone screw terminals' at the EOL device
5. Interference from old or flickering fluorescent lights, low voltage transformers, or general (less common). Ensure cable is screened and install a Ferrite core on the zone cables. Ensure detector is away from light.
6. Dirty or contaminated optical chambers (MK3). Replace with a new optical chamber.
7. Output unit with no power or no link in fault input.
8. Faulty Zone at control panel (20-30 volts healthy, 1-20 volts faulty, 0 volts zone switched off). Re
9. Weak EOL signal. Replace the EOL device.

False Alarms

1. Dirty or contaminated optical chambers. Replace with a new optical chamber.

2. Incorrectly set smoke detector (smoke is not suitable for kitchens, bathrooms, boiler rooms etc., however, SM3 may be suitable outside a bathroom or kitchen but the individual situation needs to be looked at very carefully). Incorrectly set heat detector (HM1 is not suitable for kitchens, and HM3 should be kept for hotter areas such as plant rooms)
3. Faulty detector. Replace with a new one.

4. Detector software crashed (generally only on 1st power up of a new system). Faults and fires generated rapidly and at random, across whole system (very scary). Power whole system down for five minutes in order to drain detector capacitors, so that they may reboot on power up.

5. Ensure that the Optical Chamber is installed when the system is powered up, or a fault condition will be generated. This could translate into a false alarm, depending on the state of the detector.

General Faults

1. Sounder fault led – this only activates for a fault on the conventional sounder circuit so check for O/C, S/C and 4k7 EOL resistor

2. Remote Fire Output fault led – this only activates for a fault on the Remote Fire Output so check for O/C, S/C and 4k7 EOL resistor. Check also that the relay used has the correct polarisation and suppression diodes installed

3. System Fault LED – This will light after a CPU reset and will be cleared by a ‘silence and reset’ at AL2. If this does not clear the fault then reprogram all panel settings to a different value and back again (ie, no of zones to 2, then back to 3) in order to re write all the settings to memory. This will clear the fault

4. Power fault flashing (mains fault) – Check that the 230V AC mains supply is live and the fuses are healthy.

5. Power fault continuous (battery or charger fault) – Check that the correct batteries are installed, the fuse has not blown and that the mains supply is live

6. Earth fault. One of the circuits is connected to ground. Remove them one at a time until the relevant circuit is found, following which an electronic test meter may be used to track the problem.

7. All lights on – possibly water in a detector.

Finding Zone Faults

A fault on a zone of the Twinflex system may be found as follows:

1. In order to prove whether the fault is control panel based or within in the field & wiring, swap the wires from the zone in fault with those in a clear zone (active but no fault) at the control panel.

   If the fault moves with the wiring then the fault is in the field, if the fault stays on the same zone then the fault is in the control panel.

2. Examine the LEDs carefully for signs of the fault as follows:

   If the buzzer has been silenced create another fault to cause it to return, ie, remove a battery lead until the buzzer starts again.

Zone Fault LED action	Reason
LED flashing faster than buzzer	The control panel is receiving too many EOL signals or a device is in fault.
LED flashing at the same rate as buzzer	The control panel is not receiving an EOL signal. Could be o/c, s/c or no EOL

Multipoint LED action	Reason
20 second flash	The detector is operating normally and is not set to EOL.
5 second flash	The detector is operating normally and is set to EOL.
1.5 second flash	The detector is in fault, check for dust contamination and that the optical chamber is locked on correctly.
0.3 second flash or continuous	The detector has triggered into the fire state and is not yet reset. Check for smoke and contamination.

Manual Call Point LED action	Reason
No LED	The MCP is operating normally, or is not powered at all. Test the MCP to clarify.
5 second flash	The MCP is operating normally and is set to EOL.
0.3 second flash	The MCP has triggered into the fire state and is not yet reset.

Output Module LED action	Reason
No LEDs	The O/P module is operating normally, or is not powered at all. Test the module by making the 'fault loop' open- circuit to clarify.
Yellow LED	The module is in fault, check for continuity of fault loop, and check 24v DC supply is present.
Red LED	The module has been triggered from the control panel and has not yet been reset.

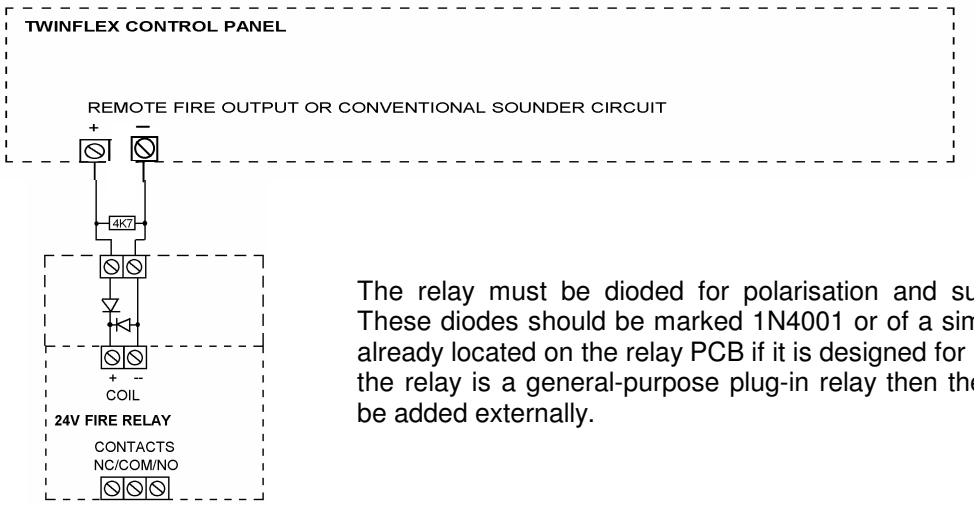
3. If steps 1. and 2. do not clarify the matter then split the zone wiring at a suitable mid point, removing the outgoing cables from the terminals completely, and then setting the EOL switch to the on position before reassembling that device.

   If the fault clears then it is after that point, but if the fault persists then it is before that point.

   The split may then be moved in the relevant direction, halving the remaining devices, and the procedure repeated until the fault is found.

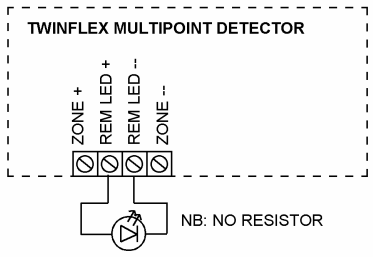
Advanced Connections

Monitored Relays on the 'Remote Fire Output'

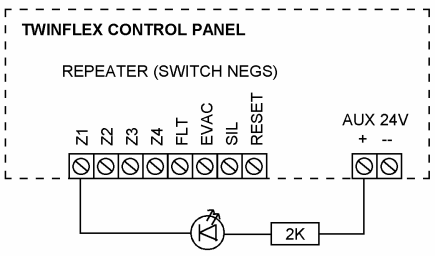


The relay must be dioded for polarisation and suppression as shown. These diodes should be marked 1N4001 or of a similar type, and may be already located on the relay PCB if it is designed for Fire Alarm Systems. If the relay is a general-purpose plug-in relay then the diodes may need to be added externally.

Remote indication LEDs



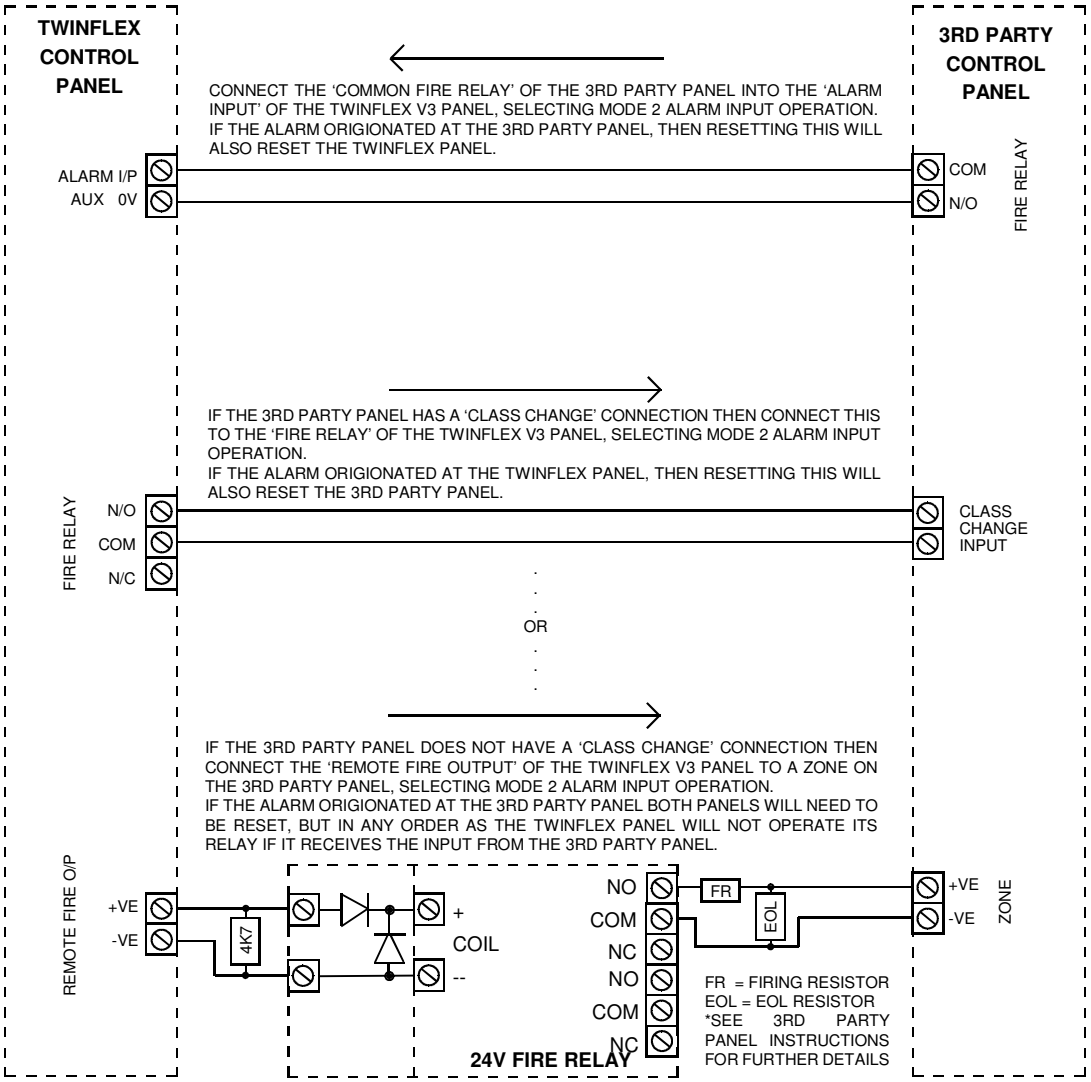
If a remote indication LED is required to indicate the operation of a Multipoint detector, you may connect as shown here.



If a remote indication LED is required to indicate the activation of a zone at the control panel, then connect as shown here.

This could also be used to indicate that a 'Confirmation Alarm' is in progress, by selecting the 'Confirmation Repeat' mode. See page 46 for further details.

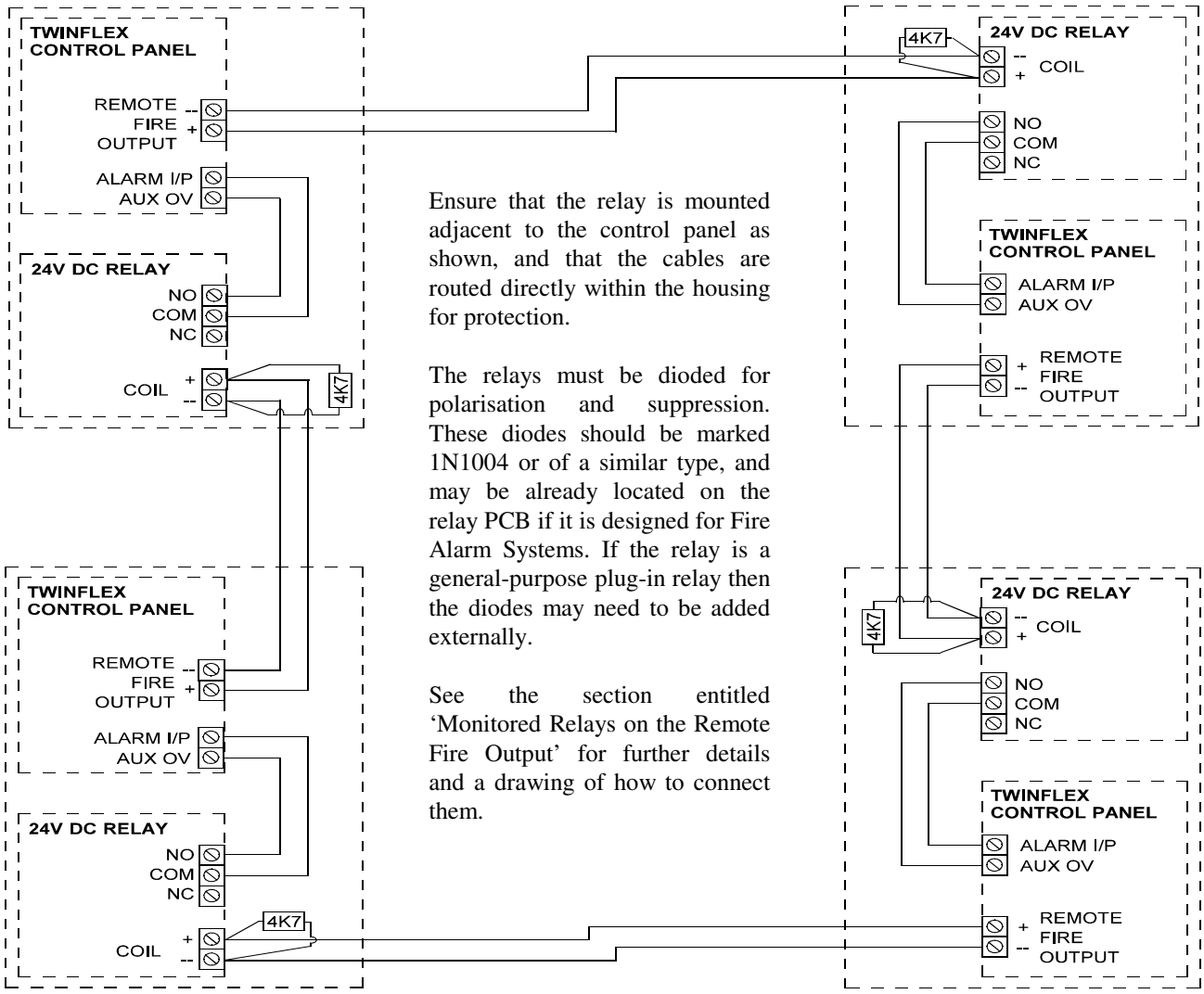
Connecting Two Control Panels Together


TWINFLEX CONTROL PANEL
3RD PARTY CONTROL PANEL
CONNECT THE 'COMMON FIRE RELAY' OF THE 3RD PARTY PANEL INTO THE 'ALARM INPUT' OF THE TWINFLEX V3 PANEL, SELECTING MODE 2 ALARM INPUT OPERATION.
IF THE ALARM ORIGIONATED AT THE 3RD PARTY PANEL, THEN RESETTING THIS WILL ALSO RESET THE TWINFLEX PANEL.
ALARM I/P
AUX 0V
COM
N/O
FIRE RELAY
IF THE 3RD PARTY PANEL HAS A 'CLASS CHANGE' CONNECTION THEN CONNECT THIS TO THE 'FIRE RELAY' OF THE TWINFLEX V3 PANEL, SELECTING MODE 2 ALARM INPUT OPERATION.
IF THE ALARM ORIGIONATED AT THE TWINFLEX PANEL, THEN RESETTING THIS WILL ALSO RESET THE 3RD PARTY PANEL.
FIRE RELAY
N/O
COM
N/C
CLASS CHANGE INPUT
OR
IF THE 3RD PARTY PANEL DOES NOT HAVE A 'CLASS CHANGE' CONNECTION THEN CONNECT THE 'REMOTE FIRE OUTPUT' OF THE TWINFLEX V3 PANEL TO A ZONE ON THE 3RD PARTY PANEL, SELECTING MODE 2 ALARM INPUT OPERATION.
IF THE ALARM ORIGIONATED AT THE 3RD PARTY PANEL BOTH PANELS WILL NEED TO BE RESET, BUT IN ANY ORDER AS THE TWINFLEX PANEL WILL NOT OPERATE ITS RELAY IF IT RECEIVES THE INPUT FROM THE 3RD PARTY PANEL.
REMOTE FIRE O/P
+VE
-VE
4K7
+
COIL
--
NO
COM
NC
NO
COM
NC
24V FIRE RELAY
FR
EOL
+VE
-VE
ZONE
FR = FIRING RESISTOR
EOL = EOL RESISTOR
*SEE 3RD PARTY PANEL INSTRUCTIONS FOR FURTHER DETAILS

The second control panel could, of course, be another Twinflex control panel.

Only a maximum of two panels should be connected in this way. If more than two control panels are to be interlinked contact your supplier for details. However, if all the control panels are Twinflex V3 control panels then see below.

Connecting More Than Two Twinflex Control Panels Together



Ensure that the relay is mounted adjacent to the control panel as shown, and that the cables are routed directly within the housing for protection.

The relays must be dioded for polarisation and suppression. These diodes should be marked 1N1004 or of a similar type, and may be already located on the relay PCB if it is designed for Fire Alarm Systems. If the relay is a general-purpose plug-in relay then the diodes may need to be added externally.

See the section entitled 'Monitored Relays on the Remote Fire Output' for further details and a drawing of how to connect them.

In order to interconnect a number of Twinflex control panels together connect them as shown above. This will ensure that all cables are monitored, and system lock-up will be avoided.

This is suitable for all V3 control panels, and the V2 eight zone control panel. If any other versions of Twinflex control panel are to be interlinked please contact your supplier for further details.

The control panel at which the alarm condition originated will show the relevant zonal fire indication. Resetting this control panel will reset all control panels.

All other control panels will show common and remote fire indication only. These control panels may be reset individually if required.

Ensure that the Remote Alarm Input is programmed for Mode 4 operation.

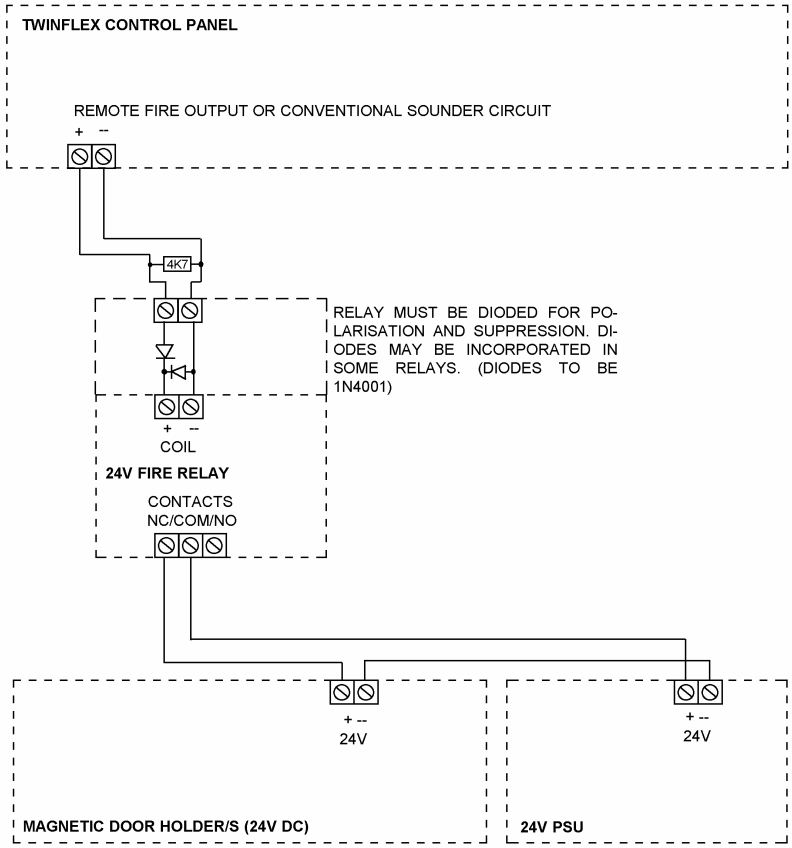
The configuration shown above will cause the entire system to reset when the panel in alarm is 'Reset'. If it is required that the system wide reset should follow the 'Silence' command then use the conventional sounder circuit (Bell Output) instead of the Remote Fire Output.

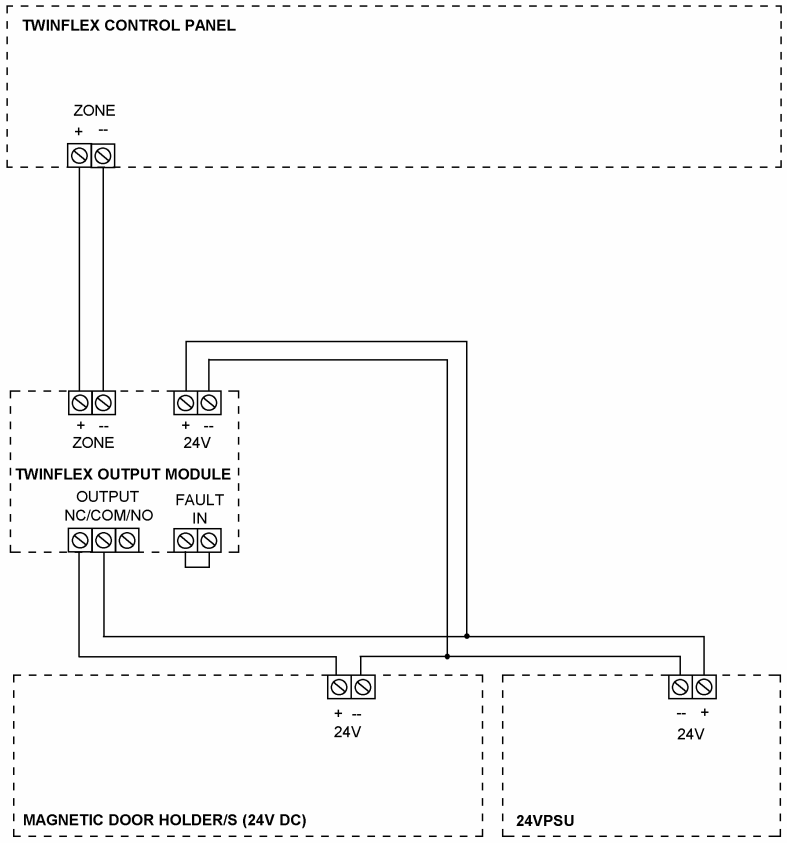
Magnetic Door Hold Units

If magnetic door hold devices are required, it is recommended that they are connected as shown in the upper right diagram. This is suitable if it is convenient to cable to the control panel.

We recommend the use of 24V DC Magnetic Door Hold units, in order to enable them to operate from a power supply with a battery standby. This ensures normal operation in the event of an interruption to the power supply.

For assistance in choosing a suitable power supply unit, standby batteries, and Magnetic Door Hold units please contact your supplier.





If this is not convenient, then the lower left diagram shows how to connect door hold magnets using the Twinflex Output Module.

This may be sited on the two-wire detection circuit, and does not need to be cabled back to the control panel if the zone extends to that area.

The 'Fault In' circuit on the output module should be connected to the power supply unit fault contacts. These need to be normally closed circuit, and open circuit in the event of a fault.

Technical Data

Control Panel Specification

	2/4 Zone Panel	*8 Zone Panel*
Dimensions (mm)	310W x 243H x 85D	315W x 400H x 90D
Weight (excluding batteries)	2.3 Kg	6.2 Kg
Construction	V2 rated ABS	Mild Steel
Cable Entry	10 x 20mm knockouts in metal insert	15 x 20mm knockouts in top 11 x 20mm knockouts in back
Cable type	2 core 1.5mm^2 screened fire rated cable, 500m (max per zone)	
Detection zones	2 or 4	8
Devices per zone	32	
Device Protocol	Rafiki Twinflex v3	
Monitored sounder circuits	1	
Monitored relay circuits	1	
Relays on board	Common fire and common fault	
Operating standard	BS EN54-2 & 4	
Operating temperature	5^{O}C to 40^{O}C	

Control Panel Ratings

	2/4 Zone Panel	*8 Zone Panel*
Mains voltage	230V AC +10% -15%	
PSU output (4 hour continuous)	900 mA	3A
Operating voltage (nominal)	24V DC	
Battery charger output	110 mA	550 mA
Charger high impedance voltage	<4V DC	
Battery voltage	27.6 V DC @ 20^{O}C	
Battery capacity (24hr standby)	2 x 12V 2.1 Ah	2 x 12V 3.3Ah
Battery capacity (72hr standby)	2 x 12V 2.1 Ah	2 x 12V 7.2Ah
Zone output (max)	250 mA	250 mA
Zone voltage (nominal)	30V DC	
Sounder output load (max, fused)	500 mA	1A
Sounder output EOL	4K7	
Remote fire output load (mon relay)	250 mA	1A
Remote fire output EOL (mon relay)	4K7	
Auxiliary 24V DC supply (max)	250 mA	1A
Repeater outputs	50 mA sink (do not exceed a total of 280 mA)	
Common fire relay	Volt free SPCO contacts 1A 30V max	
Common fault relay	Volt free SPCO contacts 1A 30V max	
Loading	32 SLU max per zone	

Control Panel Fuses

	2/4 Zone Panel	*8 Zone Panel*
Zone output	300 mA trip polyfuse	300 mA trip polyfuse
Sounder output	500 mA F 20mm	1A F 20mm
Remote fire output (mon relay)	300 mA trip ployfuse	1A F 20mm
Auxiliary 24V DC supply	300 mA trip polyfuse	1A trip polyfuse
Mains	T315 mA (Time delayed) 20mm	3AT (anti surge) 20mm
Battery	110 mA current limiter	550 mA current limiter
Battery (reverse polarity)	3.15A F 20mm (in line with leads)	3.15A F 20mm (on board)

Twinflex Multipoint Detector

	No Sounder	***With Sounder***
Dimensions (mm)	105 diameter x 61.5H	
Weight	0.27Kg	
Operating voltage	18 – 35V DC (28V DC nominal)	
Operating current (detector)	60 uA (quiescent), 39mA (alarm)	
Operating current (sounder)	0 (quiescent)	0 (quiescent), 7mA (alarm)
Operating environment	-10^{O}C to +50^{O}C	
Ingress Protection	IP21	
Sounder alarm levels	90 dB(A) (high), 75 dB(A) (low)	
Indication	Red flashing LED: 20s (normal), 5s (EOL), 1.3s (fault), on (active)	
Device Protocol	Rafiki Twinflex	
Loading	1 SLU (hi or lo volume)	
Note: when a detector goes into alarm condition in a particular zone, all the other detectors in that zone are disabled, so only the sounders in that zone draw extra current.		

Twinflex Manual Call Point

	No Sounder	
Dimensions (mm)	115W x 115H x 7025D	
Weight	0.28 Kg	
Operating voltage	18 – 35V DC (28V DC nominal)	
Operating current (MCP)	105 uA (quiescent), 5mA (alarm)	
Operating current (sounder)	0 (quiescent)	16mA (alarm hi), 8 mA (alarm low)
Operating environment	-10^{O}C to +50^{O}C	
Ingress Protection	Standard IP21	Weatherproof IP55
Sounder alarm levels	90 dB(A) (high), 75 dB(A) (low)	
Indication	Red flashing LED: 5s (EOL), 0.3s (active)	
Device Protocol	Rafiki Twinflex	
Loading	1 SLU (hi or lo volume)	

Twinflex Hatari Sounder

	Sounder
Dimensions (mm)	105 diameter x 62H
Weight	0.35 Kg
Operating voltage	18 – 35V DC (28V DC nominal)
Operating current (sounder)	2 mA (quiescent), 15mA (alarm)
Operating environment	-10^{O}C to +50^{O}C
Ingress Protection	IP21
Sounder alarm levels	103 dB(A) (full), rotary pot adjustment
Indication	none
Device Protocol	Rafiki Twinflex
Loading	6 SLU (hi or lo volume)

Twinflex Flash Point

	Sounder / Beacon *Note, IP55 version is a beacon only*
Dimensions (mm)	105 diameter x 61.5H
Weight	0.21 Kg
Operating voltage	18 – 35V DC (28V DC nominal)
Operating current (sounder)	105 uA (quiescent), 13mA (alarm)
Operating current (Beacon)	6mA
Operating environment	-10^{O}C to +50^{O}C
Ingress Protection	Standard IP21 Weatherproof IP55
Sounder alarm levels	90 dB(A) (high), 78 dB(A) (low)
Indication	Red flashing LED: 5s (EOL)
Device Protocol	Rafiki Twinflex
Loading	1 SLU (lo volume), 2 SLU (hi volume)

Twinflex Sound Point

	Sounder
Dimensions (mm)	115W x 115H x 7025D
Weight	0.21 Kg
Operating voltage	18 – 35V DC (28V DC nominal)
Operating current (sounder)	105 uA (quiescent), 16mA (alarm)
Operating environment	-10^{O}C to +50^{O}C
Ingress Protection	Standard IP21 Weatherproof IP55
Sounder alarm levels	85 dB(A) (high), 75 dB(A) (low)
Indication	Red flashing LED: 5s (EOL)
Device Protocol	Rafiki Twinflex
Loading	1 SLU (lo or hi volume)

Twinflex Hi Point

	Sounder
Dimensions (mm)	128W x120H x 110D (flush) or 53D (surface)
Weight	0.21 Kg
Operating voltage	18 – 35V DC (28V DC nominal)
Operating current (sounder)	105 uA (quiescent), 16mA (alarm)
Operating environment	-10^{O}C to +50^{O}C
Ingress Protection	IP21
Sounder alarm levels	90 dB(A) (high), 75 dB(A) (low)
Indication	Red flashing LED: 5s (EOL)
Device Protocol	Rafiki Twinflex
Loading	1 SLU (lo or hi volume)

Twinflex Output Module

	Output Module
Dimensions (mm)	140W x 85H x 45D (standard 2G format)
Construction	Mild steel
Operating voltage	18 – 35V DC (28V DC nominal)
Operating current	450 uA (quiescent), 2mA (alarm)
Operating environment	-10^{O}C to +50^{O}C
Ingress Protection	IP21
Relay output	Volt free SPCO contact, 6A 230V AC
Power supply required	24V DC,
Indication	Red LED (active), yellow LED (fault)
Device Protocol	Rafiki Twinflex
Loading	1 SLU (hi or lo volume)

Twinflex Repeater Panel

	8 Zone Repeater	***16 Zone Repeater***
Dimensions (mm)	310W x 243H x 85D	
Weight	0.17Kg	
Construction	V2 rated ABS	
Cable Entry	10 x 20mm knockouts in metal insert	
Cable requirements	2 cores (24V DC), 4 cores (controls & fault), 1 core (per zone required)	
Display zones	8	16
Operating voltage	20 – 28V DC (24V DC nominal)	
Operating current	10 mA (quiescent with power LED on) alarm: 30 mA plus 10 mA for each zone in alarm	
Operating environment	-10^{O}C to +50^{O}C	
Ingress Protection	IP21	
Device Protocol	24V DC switched negative triggering	

Resistor Colour Codes

Band	4 Band Codes	5 Band Codes		Colour	Digit	Multiplier
1	1st Digit	1st Digit		Black	0	1
2	2nd Digit	2nd Digit		Brown	1	10
3	Multiplier	3rd Digit		Red	2	100
4	Tolerance	Multiplier		Orange	3	1 000
5	-	Tolerance		Yellow	4	10 000
				Green	5	100 000
On colour coded resistors the band at one end will be spaced further apart than the others. The resistor should be viewed with this band to the right as follows, reading from the left and side of the resistor:				Blue	6	1 000 000
				Violet	7	-
				Grey	8	-
				White	9	-
				Gold	-	0.1
				Silver	-	0.001

Technical Support

For further technical support please contact your **distributor.** Do not call the Rafiki Protection technical support department unless your distributor has first given their advice and attempted to rectify the issue.

Technical support will not be available if the instruction manual has not been read and understood. Please have this instruction manual available whenever you call for technical support.

Due to the complexity and inherent importance of a life risk type system then training on this equipment is essential, and commissioning should only be carried out by competent persons.

Battery Calculations

Where: IS = Standby Current
IA = Alarm Current
MP = Multi Point Detector

Current Drawn From Panel

Item	Quantity	IS (mA)	Tot IS (mA)	IA (mA)	Tot IA (mA)
Twinflex 2z Panel		12.000		62.000	
Twinflex 4z Panel		12.000		82.000	
Twinflex 8z Panel		30.000		125.000	
Multipoint no sounder		0.065		39.000	
Multipoint with sounder Hi		0.065		55.000	
MCP no sounder		0.105		5.000	
MCP with sounder		0.105		16.000	
Flashpoint		0.190		19.000	
Soundpoint		0.105		16.000	
Hipoint		0.105		16.000	
Twinflex Hatari Sounder		0.500		15.000	
Output Module (from panel)		0.450		0.450	

ADD

Totals		IStot (mA) **A**		IAtot (mA) **B**	
Times (hrs)		Standby (hrs) **C**		Alarm (hrs) **D**	
Current required (mAh)		IS (mAh) **E**		IA (mAh) **F**	
Total Current (mAh)				E + F = **G**	
Total Current (Ah)				G / 1000 = **H**	
Battery requirement (Ah)				H x 1.25 = **J**	

Current Drawn From PSU

Item	Quantity	IS (mA)	Tot IS (mA)	IA (mA)	Tot IA (mA)
O/P module (from PSU)		5.000		15.000	

ADD

Totals		IStot (mA) **K**		IAtot (mA) **L**	
Times (hrs)		Standby (hrs)**M**		Alarm (hrs) **D**	
Current required (mAh)		IS (mAh) **O**		IA (mAh) **P**	
Total Current (mAh)				O + P = **R**	
Total Current (Ah)				R / 1000 = **S**	
Battery requirement (Ah)				S x 1.25 = **T**	

Current Drawn From PSU

Total System Current Required (mAh)		J + T = **U**	

Installation Checklist

Use the following checklist to ensure that your work is correct and that the commissioning engineer has the necessary information to complete the commissioning of the system

If you require a commissioning visit the engineer will require this sheet, along with 'Zone Continuity and Insulation Test Results' and correctly marked 'as-wired' drawings, before attending site to commission the system.

Stage 1

Description	**Installation Engineer Checked**	**Commissioning Engineer Checked**
Zone cables installed correctly, clipped or in containment.		
All device bases and back boxes installed and terminated.		
Cable insulation and continuity testing complete, and form filled out.		
As-wired drawing marked up showing cable runs and devices.		
Control Panel backbox installed with 240v AC supply live, tested and isolated locally		

Stage 2

Depending on the terms of your contract, you may also be required to carry out 'Stage 2'.

Description	**Installation Engineer Checked**	**Commissioning Engineer Checked**
Devices installed into bases and back-boxes		
Detector dust covers fitted		

Site Name & Address:	
Installation Company:	
Testing Engineer:	
Signature:	
Date:	

Commissioning Checklist

The following checklist may be used to ensure that all steps are taken. This is not a BS5839 certificate and serves as a reminder only and may need additional items added to suit your working practices.

Step 1

Description	**Commissioning Engineer Checked**
Panel powered up (240V ac Mains first, then batteries). Nothing else connected. All zones showing fault.	
Program the number of 'Active' zones required, check that zones not required are clear of fault.	
Low voltage multimeter test of cables to show no inter-core short circuits.	
End of Line device installed with EOL switch in the ON position, and connected to the relevant zone. The zone fault should clear. Repeat for all zones.	
Remainder of devices added one at a time, with DIL switches set, device installed and then allowed aprox 30 - 50 secs to clear fault condition.	
All faults (device, input, output, EOL, battery, etc,) cleared from control panel.	

Step 2

Control panel programmed for any additional features.	
All other cables connected and clear of fault	

Step 3

Correct operation of all input devices tested, ie, detectors, manual call points and inputs.	
Correct operation of all output devices tested, ie, sounders, relays and outputs	
Correct operation of all programmed actions tested, ie, instant alarms, confirmation alarms, two stage alarms	

Step 4

System Manuals completed, zone chart or zone list displayed.	
End user or responsible person trained and user manual issued.	

Site Name & Address:	
Commissioning Company:	
Commissioning Engineer:	
Signature:	
Date:	

Cable Continuity & Insulation Test Results

After installation of the cable, and termination into all the relevant back-boxes, install a wire link between the zone +ve and –ve connections at the last device in order to be able to take cable continuity readings, removing it to take insulation readings. Make sure that all the cables are dressed smoothly and neatly into their back-boxes in order that they will not be disturbed after the readings are taken.

The commissioning engineer will require these readings, along with correctly marked 'as-wired' drawings, before attending site to commission the system.

Core	**Continuity Reading (ohms)**							
	Z1	Z2	Z3	Z4	Z5	Z6	Z7	Z8
Zone +ve to –ve with a temporary link at the last device.								
Sounder circuit +ve to -ve with a temporary link at the last device.								
Others . .								

A reading of approximately 1 ohm per 100 meters of 1.5 mm^2 cable is expected and any significant variation from this should be investigated. If the above readings are satisfactorily showing circuit continuity then you may also take the reading below, remembering to remove your temporary link at the last device.

Core	**Insulation Reading (M ohms)**							
	Z1	Z2	Z3	Z4	Z5	Z6	Z7	Z8
+ve to -ve								
+ve to Earth								
-ve to Earth								
Screen to mains Earth: with scrn disconnected from panel								
Others . .								

A reading in excess of 1 M ohm is expected and any significant variation from this should be investigated. If the readings are satisfactory then the loop wiring is largely proven other than for faults such as complete polarity reversal.

Site Name & Address:	
Installation Company:	
Testing Engineer:	
Signature:	
Date:	

FIRE ALARM SYSTEM NOTICE

To Enable the Control Panel Keys

If your control panel has a key switch then turn the key, if not then press 'ACCESS' followed by your 3 digit pass code. The 'Controls Enabled' LED should then be illuminated. If after entering the code further action is not taken the 'Controls Enabled' light will time out eventually.

To disable the control panel keys turn the key switch off, or press 'ACCESS' followed by your 3 digit pass code as appropriate. When disabled the 'Controls Enabled' LED should then be extinguished.

To prevent unauthorised operation the controls should be kept disabled and the key/code kept secure under the control of the responsible person

To Manually Operate the Fire Alarm Sounders

Press 'SOUND ALARMS' (button 3). To silence the alarm press 'SILENCE ALARMS' (button 2). To reset press 'RESET SYSTEM'.

Following a Detector or Manual Call Point Operation

The 'FIRE' LED will illuminate, the fire alarms and the internal buzzer will operate as programmed. Take appropriate action as defined by the emergency plan for the premises.

To silence the alarm press 'SILENCE ALARMS', then establish the cause of the alarm and enter the details in the log book.

Reset any Manual Call Points which may have been operated, or if a detector has been operated be sure that the cause of the alarm has been removed, before resetting the system by pressing 'RESET SYSTEM'.

Following a Fault Condition

The appropriate fault LEDs will illuminate. The internal buzzer will sound. To mute the internal buzzer press 'SILENCE BUZZER'. Investigate and rectify the appropriate fault (competent persons). Once the fault has been rectified the fault indication will clear automatically.

To Test The Lamp Indication LEDs

Press 'LAMP TEST' and hold it for at least 5 seconds. The controls must be enabled.

Important Notes

It is a requirement of the **Workplace Regulations** that your Fire Alarm System must be regularly serviced by competent persons.

FIRE ALARM COMPANY: _____

ADDRESS: _____

For service phone: _____ (Working hours) _____(Out of working hours)

FIRE ALARM SYSTEM NOTICE

Note

The Fire alarm system installed in this building has 'Checkpoint Plus' technology to help eliminate false alarms.

Please read and understand the following information in order to make the most use of the system.

Operation

When the detector within your area activates it will initially only operate the sounders within your own area for a predetermined 'Confirmation' time.

At the end of the 'Confirmation' time the system will check the detector again to see if the activation has cleared. If so then the sounders will silence and no further action need be taken.

If, however, the detector is still activated then the entire system will go into alarm, operating all the sounders on the system.

Action Required

If you think that you may have accidentally set off the fire alarms then check the following:

If the fire alarm within your area only is sounding, then check your own area for the cause of the alarm. If this proves to be a false alarm due to dust, cooking fumes, steam, cigarette smoke, etc, then clear the smoke from the area in order to allow the system to reset itself after a few minutes. If this happens then no further action is required.

If you discover a genuine fire, or the fire alarms in the communal areas are also sounding, then follow the buildings fire procedures for evacuation, activating the nearest Fire Alarm manual call point on the way out.

Do not attempt to put out the fire unless it is safe to do so.

Further Information

Further information will be located adjacent to the Main Fire Alarm Control Panel, or may be obtained from either the person responsible for building maintenance or from the Fire Alarm Company responsible for maintaining the Fire Alarm System.

Important Points

- Use a **2-core 1.5mm^2 and earth/screen fire rated cable** similar to FP200 or MICC (page 10).

- Connect all the devices including sounders in a **radial circuit** from the control panel, ending at the last device. **Do not spur** from this circuit. (page 11).

- Make sure that the earth cables are sleeved, connected together and connected to **earth at the control panel** (page 10).

- **Do not use an 'End Of Line' resistor**, each device generates an 'EOL' signal; simply switch it on (page 19).

- **Do not use an 'EOL' resistor on unused zones**; switch the zone off (page 46).

- How to go about the **commissioning** (page 53).

- 3 simple steps to **fault finding** (page 57).

- Keep the detector clean, dust and contamination will result in faults and false alarms, **use the dust cover** until the site is clean and dust free. (page 21).

- Leave a copy of the '**User Instructions'** by the panel, and make sure you have explained its operation carefully to the relevant persons (the User, not contractors or their agents). (page 70).

If you have any further queries, please contact your supplier for further information.